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PEASE COMMUNITY ASSISTANCE PANEL (CAP) MEETING

February 8, 2021

The verbatim transcript of the Meeting of the Pease Community Assistance Panel held virtually on February 8, 2021.

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P R O C E E D I N G S

(6:00 p.m.)

WELCOME AND INTRODUCTIONS

CDR MUTTER: Okay, I want to welcome everybody to the Pease CAP meeting today. We appreciate you joining us. We are going to go ahead and do welcome and introductions, and we'll move on from the agenda that you see on the screen as soon as that is done. So I'll go ahead and start. I'll start with Andrea.

MS. AMICO: Hi, Andrea Amico from Portsmouth, New Hampshire, Pease CAP member and cofounder of Testing for Pease.

CDR MUTTER: Thank you. Karen Anderson. I see she's trying to talk. Maybe you're on mute. Okay. So she's having difficulties, so Karen Anderson is on the call. She's waving. Thank you. Lindsey Carmichael, let me know she would not be able to attend. Michelle.

MS. DALTON: Hi, can you hear me okay?

CDR MUTTER: We can.

MS. DALTON: Wonderful. Michelle Dalton, CAP member and cofounder of Testing for Pease, and I'm from Durham, New Hampshire.

CDR MUTTER: Thank you. Alayna.

MS. DAVIS: Hi. My name is Alayna Davis. I'm a CAP member and cofounder of Testing for Pease. And I worked on enforcement at Pease.

CDR MUTTER: Thank you. Rich.

MR. DIPENTIMA: Hi, Rich DiPentima, Portsmouth, New Hampshire, former chairman of the CAB committee, now a member of the CAP.

CDR MUTTER: Thank you. Do we have Senator Martha Fuller Clark on? I don't believe so. Robert Harbeson, Cliff Lazenby and Toni McLellan let me know they were not going to be on. Is Russell on?

MR. OSGOOD: Yes, Russell Osgood. I'm with the Portsmouth Fire Department representing them on the CAP. Thanks.

CDR MUTTER: Thank you. And Joe Ryan also let me know he was not going to be on tonight. Is Jared on? Okay. Mark Sullivan. And Shelley Vetter.

MS. VETTER: Yep, Shelley Vetter. Member of the CAP and owner of Discovery Child Enrichment Center.

CDR MUTTER: Thank you. Dr. Carignan. Dr. Durant.

DR. DURANT: Yeah, hi. I'm John Durant. I'm on the civil and environmental engineering faculty at Tufts University.

CDR MUTTER: Thank you. Dr. Schaidler.

DR. SCHAIDER: Hi there. This is Laurel Schaidler from Silent Spring Institute.

CDR MUTTER: Thank you. And I want to take a moment before we move on to our ATSDR staff to say welcome and goodbye. We have two people, one's joining and one's leaving. Neither one of them are on the call, but I did want to say welcome to Toni McLellan who's a member of the City of Portsmouth Health Department and a big old thank you to Stefany Shaheen who has been a CAP member I think from the very beginning. So just wanted to make those acknowledgements before we moved on. So with that, let's move on to ATSDR staff. I'm just going to call on you as I have written you down. Brad.

DR. GOODWIN: This is Brad Goodwin. I'm the Deputy Director of ATSDR's Office of Community Health and Hazard Assessment. I'm also the lead for our Exposure Assessment project.

CDR MUTTER: Thank you. And Pam Wyton.

MS. WYTON: Hi, I'm Pam Wyton. I'm with NCEH/ATSDR's Office of Communication helping with the zoom webinar.

CDR MUTTER: Thank you. Frank Bove.

DR. BOVE: Yeah, I'm Frank Bove. I'm the co-PI on the Pease study.

CDR MUTTER: Tarah.

CAPT SOMERS: Tarah Somers. I'm with the ATSDR Region One.

CDR MUTTER: Thank you. Kim Dills.

MS. DILLS: Hi, Kim Dills, congressional affairs lead in the Policy Office for NCEH and ATSDR.

CDR MUTTER: Thank you. Lori Launi.

MS. LAUNI: Hi, I am the PFAS communication lead.

CDR MUTTER: Thank you. And Meghan.

MS. WEEMS: Hi, Meghan Weems, the program manager for the Multi-site study.

CDR MUTTER: Thank you. Marian.

DR. PAVUK: I'm Marian Pavuk co-PI on Pease and [inaudible].

CDR MUTTER: Thank you. And Dr. Breysse. Dr. Breysse, you're on mute.

DR. BREYSSE: So I'm the Director of ATSDR and the National Center for Environmental Health.

CDR MUTTER: Thank you. And our contractors, I'll start with Danielle.

DR. HUNT: Hi, I'm Danielle Hunt, study director.

CDR MUTTER: Thank you and Zuha.

MS. JEDDY: Hi, I'm Zuha. I'm the project manager for the Pease study - on Abt's side.

CDR MUTTER: Thank you and Kate.

MS. DUROCHER: I'm Kate Durocher. I am the communication and community engagement task lead.

CDR MUTTER: Thank you. And last but not least, Colonel Holifield.

COL HOLIFIELD: Good evening. My name's Colonel Freeman Holifield. I'm from the Air Force Secretariat.

CDR MUTTER: Thank you. Did I miss anybody on the call? All right. And we want to welcome our community members on the call as well. There'll be a time in the agenda coming up for questions from the audience. And so when we get to that part, Pam Wyton will let us know the directions on how to ask your questions. So until then, we will move on to, sorry, I want to move back. Are there any intros you want, Dr. Breysse? Any remarks before we move on with the agenda?

DR. BREYSSE: No, I think we should just move on to it. So we're excited about, you know, being back in the field, and we're doing everything we can to keep the study on track. And so let's just move on to the agenda.

ACTION ITEMS FROM THE PREVIOUS CAP MEETING

CDR MUTTER: Perfect. So we are going to start with the action items from the last CAP meeting, which is believe it or not September of 2020. Which was a while ago. We didn't have too many action items, so this should go pretty fast as well. The

first action item was for ATSDR. ATSDR will share the exposure assessment site summaries with the CAP. And this was done on October 1st and December 3rd respectively. October 1st was Massachusetts, West Virginia, Delaware and Washington. And December 3rd was Texas. The next action item was for ATSDR as well. The CAP asked for ATSDR to provide them a more detailed summary of the exposure assessment results, i.e. presentation during the next virtual CAP meeting, and that is on our agenda for tonight. Brad Goodwin, Dr. Goodwin will be giving that as well. The next agenda item is, next two are for DoD, and these, I'm going to read them, but they were both answered via email on December 10th. The first one was the CAP asked if the blood test for DoD firefighters includes former firefighters in addition to current firefighters. And the second DoD question was the CAP asked the DoD to provide further clarification on using New Hampshire MCLs versus EPA MCLs for cleanup purposes. And again, those responses were sent on December 10th. Are there any questions on the action items? Okay, hearing none, let's move on to the Pease study update. Pam, would you please pull up Lori's slides? And we'll get started with an update from Lori, from Lori Launi, as soon as those slides are pulled up. Okay, Lori, if you'd like to take it from here.

PEASE STUDY UPDATE

MS. LAUNI: Yes, thanks. So I'm just going to give you a quick overview of where we are with communication and community outreach to continue our efforts on recruitment. So let's flip to the next slide. All right so we have some new materials. One of them has been the new Pease study animated video. Right now it is posted on the website, and it's on YouTube and also Senator Shaheen's office promoted it over the weekend. And we're interested in all of your help taking that and also posting it on your own pages or anywhere you can help us to amplify our message. And the same goes for some of our new social media posts. We've updated some of the, you've probably seen some of the social media posts, but we've updated them, and we've branded them a little bit more. So we want to go ahead and if you can, go ahead and help share those as well. That will be a big, big help. Also, we're working with the New Hampshire Department of Health, and hopefully they will be helping us to promote the study more with these social media posts and our videos. Also, we have some ambassador videos. We did not produce these, but the community members did, and we're going to hopefully you'll be seeing those on YouTube and through the CAP network to really attract some more people to the study. In

addition to that, we have a really great PSA going that Mark Sullivan created. He did a wonderful job, and it is running on iHeart media stations right now. Also, last, it was two weeks ago, Kate Durocher presented how to use social media. It's a PowerPoint, and we want to share it with all of the CAP members. I know not everybody is accustomed to using social media, so this will help you a little bit more. And also if you do have questions, just reach out to me or Kate, and we'll help you go through any steps you need to go ahead and use different platforms to get the message out. Also, along with those same lines, besides working with DHS New Hampshire, we are also working now with Next Door. We're still in the beginning stages of finding out what kind of help they can provide us. But if it goes well, they might be able to really target specific areas identified through the biomonitoring study. Also, thanks to our working group member, Andrea Amico, she has helped identify some media outlets who are willing to do interviews with community members and with Frank so we can explain the importance of the Pease study and the recruitment efforts and just a little bit more about PFAS. So we are still working with our agency to get that approved, but hopefully it won't take long because we'd like to see that take place this week. And on to the next, the next slide. Another thing that we have going on with community outreach is working with the TradePort businesses. The staff at the Pease study office right now are contacting local businesses. We're trying to connect with them and encourage them to share information with all of their employees about how to participate in the study. And we're sharing a lot of our fliers with them so that they can also distribute them throughout the community. Also tomorrow we have a call with a network of healthcare providers in the area. We're hoping that they will be able to help us connect better to all of the clinicians in the area so we can share with them all of our materials. We want to help educate them a little bit more about the Pease Study and post, get some posters and fliers there so that they're, when they have patients come to the office, they can talk to the physicians a little bit more about PFAS and how they can participate. And also, we're still answering questions and working with the Department of Health about how we could consent the biomonitoring participants. So those are some of the recruitment and communication activities that are going on. And we would encourage anybody also who is interested to join our working group. We have a standing call every Thursday at noon. It's, you know, this is a really great chance for you to help brainstorm and give us your insight into the community to just make sure the study stays on target, and we connect with more people. So thank you.

CDR MUTTER: Thank you, Lori. Are there any questions for Lori?

MS. AMICO: This is Andrea. I have a question going back to the last slide. I don't know if you can go back one. There was an abbreviation or an acronym that I wasn't familiar with. I was just wondering. At the bottom interviews ATSDR SMEs. I wasn't sure what that stood for.

MS. LAUNI: Oh sorry, subject matter experts. So Frank is our subject matter expert. And Marian on our Pease study.

MS. AMICO: Great. I just want to say too that I really, really liked the video. I thought it was really well done. So thank you for the efforts for that. And Senator Hassan's staff wrote back that they shared it today as well. And I also heard back from Congressman Chris Pappas. His staff told me Friday they were going to share it. I'm not sure yet if it's been up. But I can circle back to them and Congresswoman Kuster. They said they would share it with their communications team. So I think we'll see some support from our congressional delegation to share that video on their social media pages, which is great, because they have a lot of followers kind of from all over the state. So that's really well done. Thank you very much for your efforts on that.

MS. LAUNI: Great, thank you. Thank you for helping promoting it more, Andrea. I really appreciate the effort you've put into this.

CDR MUTTER: Are there any other questions for Lori or the Pease team? Okay, I'll ask Abt did you all have anything to contribute or anything to add as far as the Pease study goes?

DR. HUNT: No, nothing beyond what Lori has presented. Thanks Jamie.

QUESTIONS FROM THE AUDIENCE

CDR MUTTER: Yep, absolutely. Okay, are there any other questions for Pease study before we move on? Okay. So the next part is questions from the audience. Pam, would you, I'm not sure if we have anyone from the audience, but if we do, Pam, would you give instructions on how they can ask questions?

MS. WYTON: Sure, Jamie. So all of the attendees, you can raise your hand by clicking on the button on your Zoom screen. Or you can also raise your hand by pressing alt Y on a keyboard or star nine on your telephone. Or you can put a note in the chat and

let us know that you're wanting to talk. And then I can unmute you.

CDR MUTTER: So I'm just going to pause for a few minutes to see if we have any community members on the call that would like to ask a question. We can probably also circle back even though it's not on the agenda, circle back near the end for any questions as well in case we have people join. So Pam, do you see any questions in the chat or a raised hand?

MS. WYTON: No, I don't see any raised hands or anyone made any comments in the chat either.

CDR MUTTER: Okay, so I'll circle back around just to give one more chance for any of those that might have questions that join. So, we have a break. I suggest we don't take a break. We just got started. Let's move forward. I really do need to alter the agenda now that we're virtual. We've got this thing moving along. So we'll just keep going with the Multi-site study update. Marian and Meghan.

MULTI-SITE STUDY UPDATE

MS. WEEMS: Hey everyone. Just a quick update. We are undergoing an IRB amendment review right now. We're getting ready to submit another one, made a few changes to some of the informed consent documents. And so that should be happening soon. And then all of our site partners plan to initiate individual site work in late spring and summer. Of course, depending on the COVID-19 situation in their local areas.

CDR MUTTER: Thank you, Meghan. Are there any questions for Meghan on the Multi-site study? Okay you guys. This is going to be a record, I think. All right let's move on to the Pease health study, I'm sorry, Pease Health Consultation update. Tarah, would you please give an update for us?

PEASE HEALTH CONSULTATIONS UPDATE

CAPT SOMERS: Sure. So Gary and Greg, they incorporated all the public comments. They had about 70 of them, and it's in clearance for the private well. And they've also been working with the Town of Newington officials to assist with reaching out to some former residents who may have been exposed and no longer were in Newington. So there's was a request for that help, so they've been working with Newington on that as well to talk

about any past exposure concerns they have based on that data from the documents. So that's where we stand with documents.

CDR MUTTER: Thanks Tarah. Any questions on the public health consultation?

MS. ANDERSON: Yes. What I can update on that is I have been working through the Town of Newington doing title searches on all of the properties. It is about complete, so I'll be able to submit that in, going back probably about 30 years on each property that's changed hands. So that's almost done, and I'll be able to get that in by the end of the week.

CDR MUTTER: Great, thanks Karen. Andrea, did I see a question from you as well?

MS. AMICO: Yeah. I had a question, just kind of a general question about this process. So can you review how a community could maybe, I don't know what the right word is, self-refer ASTDR in wanting to have a public health consultation in their community? Because I feel like that question has come up from some other folks that I know across the country. And I just didn't know if someone could refresh all of us on how that process could happen.

CDR MUTTER: Tarah, you're on mute.

CAPT SOMERS: Sorry, I realized I muted again. Okay sorry. It's the 2021 theme again. So that we usually call a petition. And any member of the public or community can petition ATSDR to work on a site. It can be a formal letter if you want to write it, but sometimes it could be as informal as sending an email. You could send some of the regional representatives, or we have a petition coordinator it could go to. And then what we do is we will, you know, look at the information that's available. Again, there has to be some data for us to use. That's generally the biggest challenge with petitions that we get is that there's really no environmental data for us to start working with. So yeah, you can send anyone my way and I'll tell them how to do it.

MS. AMICO: Okay great. What do you mean by data, like water testing results for a town, or?

CAPT SOMERS: Yeah, it depends on where you're being petitioned, the petition is asking for in this case with PFAS it would likely be water concentrations. But different sites around the country, you know, people ask us for air exposures or soil. So it just depends on what the site is.

MS. AMICO: Okay, thank you very much. And then actually, can I ask Karen a follow up question if that's okay.

CDR MUTTER: Sure.

MS. AMICO: So Karen, you're researching private wells going back 30 years, is that to inform people to, I'm just curious what the reasoning behind that is.

MS. ANDERSON: It was a request put to us to look up all past residents or property owners. So what I'm doing is taking each of the 42 properties and basically doing a title search all the way back showing how long people lived in that property from owner to owner.

MS. AMICO: Then what are you doing with that information? Are you giving that to ATSDR, or are you contacting the homeowners to let them know or?

MS. ANDERSON: I'm not contacting them. I'm just submitting in all the information that I've collected. It's just going through deeds, going through the registry, looking at property transfers. The only thing I can't do is tenants. There's very few rental properties in Newington. But any of the properties, if they had been rented out, through privacy laws, I'm not even allowed to have the town clerk look at motor vehicle records attached to a property. So I can only do ownership.

MS. AMICO: Thank you.

CDR MUTTER: Are there any other questions for Tarah on health consultations? Okay, so next, Pam, if you wouldn't mind pulling up the exposure assessment presentation. I'll turn it over to Brad Goodwin.

EXPOSURE ASSESSMENT UPDATE

DR. GOODWIN: All right. Well thank you. Happy to be here to present some of the results from our PFAS Exposure Assessment so far. The process is still ongoing, so I'm just going to give you a status report for where we are now with some of the sites that we have the results for. Go to the next slide. I'm going to give a little bit of background on the exposure assessments and what we can and can't learn from those and then go into some of the findings from five sites where we do have data so far in Massachusetts, West Virginia, Delaware, Washington and Texas. I'll give you a status update on the other sites where we don't have the results yet. Talk about the next steps and then give you all an opportunity to ask any questions you might have. Go

to the next slide. And the next slide, this one has some animations that are going to pop up. What I'm going to be talking about tonight is the exposure assessments. This is one piece of the activities that ATSDR is involved in. These are to assess PFAS exposure in communities near current or former military installations. And in doing this, we're trying to compare these PFAS levels that we're measuring in participants in these communities with the general population through our National Health and Nutrition Examination Survey that measures PFAS levels in the general population and trying to identify any factors that might assess exposure. So the exposure assessments include questionnaires to understand exposure as well as blood and urine sample collection and analysis. And then some environmental measurements in tap water and in your dust. It's not a health study. We're not able to connect these exposure levels to health effects. We're just assessing exposure. We have information about what was in the water when that water was cleaned up in every case where we're working. The water concentrations have been mitigated either through taking wells offline or putting in treatment systems. So we know how long ago the exposure stopped, what the levels were when people were being exposed. And now we're going to have the biomonitoring results to add in to that. Next slide. Next piece of this work is the Pease Study. I'm not going to talk about that. You all know all of the details for what's going on there. And then next slide is the Multi-site study that will expand on the science and the relationship between PFAS exposure and health outcomes. These are just three pieces of the work. Again, what I'm going to be focused on here is the exposure assessments. Go on to the next slide. Just a little bit of information about how we chose the exposure assessment sites. These were selected based on criteria from the National Defense Authorization Act. We considered sites that had known exposure to PFAS in drinking water. And they had to have had concentrations of PFOA and PFOS combined above EPA's Lifetime Health Advisory in drinking water to be eligible for consideration. They also had to be located near a current or former military base. And then we gathered as much other information as we could about the sites and tried to pick a range of locations taking into account the type of water supply, the amount of PFAS that were measured in the water, the number of people served by the contaminated water and then how long the exposure lasted. So we took all of that information in and came up with a list of sites that we are conducting these exposure assessments. So can we go to the next slide? Here's a map with the sites, and we have two sites here that are in green and in Pennsylvania and New York that were pilot sites for a lot of the tools that we're using. Those exposure assessments were

conducted by the state health departments in Pennsylvania and New York. And they used our PFAS Exposure Assessment Technical Tools. And we learned a lot from what they were able to do. And we're using mostly the same procedures in the exposure assessments that ATSDR is running at these eight additional sites. And they are all across the country. And again, I'm going to be able to go into the results for some of those sites here tonight. Go to the next slide. Just a status on where we're at for the eight sites that we're running. We have three sites that we didn't complete the field work until after the COVID pandemic hit. So those were the sites in Alaska, Colorado and New York. We completed fieldwork at those sites between August and October of 2020. And so those samples are still in the analysis phase. We haven't done any reporting back to communities. We're waiting to get the information from the labs to have any information to share there. So that's kind of a status for those three. We did complete our fieldwork for five sites before we had to pause things. Those are the sites in Massachusetts, West Virginia, Delaware, Washington and Texas. The first four of those we completed in 2019. And the Lubbock, Texas site we completed at the beginning of March for our data collection in March of 2020. So we got through all of those before we needed to pause things. The individual results for all of our participants there have been sent back to the people who participated. And we're in the process of developing the individual site reports for those sites now. Go to the next slide. Now I'm actually going to get into the results that we have from these first five sites, and I'm going to start with the site in Hampden County, Massachusetts. This is Westfield, Massachusetts where we had a total of 459 people participate. And we had a goal across the sites of 395 participants. It was based on some assumptions about what the distribution of concentrations was going to look like. So that was the goal for recruitment. Here we got 459 including 49 children from 247 different households. And the concentrations in the water in this community were just over 200 nanograms per liter or parts per trillion of PFOA and PFOS combined and 170 nanograms per liter for PFHxS. And all of the mitigation activities in this community were completed in January of 2016. So that's the date when the water system reduced the PFAS levels below EPA's Lifetime Health Advisory. This water system had several wells. Some of them were contaminated, some were not. And in working with that system, they identified the area north of the river here that's shaded in green as the area of interest for this exposure assessment. You can go to the next slide. So here is presenting the geometric mean of the concentrations in our population from our Massachusetts site to the National Health and Nutrition

Examination Survey, which is the general population survey that CDC has been doing, measuring PFAS since 1999. So for PFOS, we're at 5.9 in Massachusetts compared to 4.7 in the general population, 4.7 for PFHxS compared to 1.2 in the general population and 1.9 compared to 1.6, all of these are micrograms per liter for general population and for our exposure assessment population. Now I do want to mention a couple of things here. While we're not necessarily comparing all of these on one slide, the populations in each of these groups are very different in terms of the demographics. We know that in general, older people tend to have higher concentrations of PFAS in the blood. And so we want to make sure that we can account for that when we do any comparison between these exposure assessment sites. We're just presenting these one by one for now. We also know that they're a different amount of time between when the water was cleaned up and when we got out into each of these communities. And there were different concentrations in the water. And so we're going to be writing a final report that compiles the information from all of these sites, and at that point, we'll be able to make those comparisons. But we're not at the point yet where we're comfortable doing that because of those differences. Move on to the next slide here. We are going, I am going to present a brief comparison to some other studies, and specifically because we have some data that was conducted in Portsmouth, New Hampshire on this slide. So here we have an occupational study. These are the PFOS concentrations. An occupational study of manufacturing workers in Alabama, some sites with exposed communities as well as NHANES comparisons both from 1999-2000s and the first year that NHANES measured PFAS in serum and the 2015-2016 NHANES data. And Portsmouth is among these exposed communities here. You see for PFOS the level in Portsmouth was 8.6. And for our Hampden County, Massachusetts site was at 5.9 for PFOS in micrograms per liter. I'm going to go through several of these relatively quickly for other species and for other sites. But in [inaudible] point I put some context around this relative to the biomonitoring that's been done in Portsmouth. Can we go to the next slide? This is showing the same level of information but for PFHxS. And here, the Massachusetts EA site at 4.7, slightly higher than the 4.1 that was measured in Portsmouth that was reported in 2015. Then to the next slide for PFOA in the Massachusetts site at 1.9 and the Portsmouth site at 3.1 for PFOA. You're going to see really similar slides to that just with each of the other exposure assessments highlighted in yellow as we go through the rest of the presentation. I'd be happy to take any questions about this at the end. Go to the next slide. This is the results from our West Virginia site and Berkeley County in the city of Martinsburg where I had 275

people including 28 children from 166 households. And the water was cleaned up here in May of 2016. We had PFOA and PFOS combined just over 100 parts per trillion and PFHxS just over 70 parts per trillion. In this community, this community was served by two separate water systems, but there was only one contaminated well. There is just an interconnection between the two where the county buys some of the water from the city. And so that's why we had to have two systems that we're both getting water from that one now. Move on to the next slide. And in this community, again, we have PFOS at 5.1 micrograms per liter compared to 4.7 in the NHANES comparison group. And PFHxS at 2.9 compared to 1.2 in the NHANES group. But our PFOA concentration here in Berkeley County, it's actually slightly lower than what we saw in NHANES. But again, none of these have been age adjusted at this point. That will happen in our individual site reports and our final report. Moving on to the next slide. Here again is the comparison of different sites where our West Virginia exposure assessment at 5.1 and the Portsmouth community at 8.6 for PFOS. Next slide. So the same information for PFHxS Portsmouth at 4.1 and our West Virginia site at 2.9. Go to the next slide. For Newcastle, Delaware, we had 214 people participate including 11 children from 134 households. Here again, we had two water systems, but they did have different wells in this case. One of the systems cleaned up in 2014 and one in 2016. There was preliminary cleanup for both of them in 2014, but then there were additional wells found that were above EPA's health advisory in one of the systems, and that was cleaned up in 2016. And here we had higher concentrations in the water, and they differed between those two systems. You'll see how that translates as we move to the next slide to look at the results here. Go to the next slide. And so here for the PFOS we're at 21.5 in our Delaware exposure assessment site compared to 4.7 in the general population, 20.1 for PFHxS compared to 1.2 in the general population and 5 compared to 1.6 for PFOA. So certainly, higher concentrations measured here than our first two sites. And if you go to the next slide, you'll see where these fall compared to some of the other communities with exposure in Newcastle here at 21.5 compared to 8.6 in Portsmouth for PFOS. The next slide 20.1 for PFHxS compared to 4.1 in Portsmouth. And then on to the next slide, we have 5.0 for PFOA in Delaware compared to 3.1 in Portsmouth. We'll move on to the next site. It's in Spokane, Washington. We had 333 people including 47 children from 168 households. The water here was cleaned up a little bit later than some of the other sites and not until 2017. We had PFOA and PFOS combined at 1,500 parts per trillion and PFHxS also at 1,500 parts per trillion. In this community, this was a single water system serving the entire

city of Airway Heights. We'll move on to the next slide. And here the concentrations were the highest of the four that we've gone through so far. We had 72.9 micrograms per liter in our Washington exposure assessment site compared to 1.2 in the general population, 42.4 compared to 4.7 for PFOS and 9.7 compared to 1.6 for PFOA. If we move on to the next slide, we'll see how these compare to Portsmouth and PFOS, Spokane had 42.4 compared to 8.6, it was actually the highest of any of the exposed communities. It's still much lower than the occupational exposure levels. The next slide. For PFHxS we're at 72.9. Again, the highest of these exposed communities but lower than occupational and then Portsmouth at 4.1. The next slide. For PFOA at 9.7 in our Washington exposure assessment and 3.1 in Portsmouth. Go on to the next slide. The last site that we have results for right now is in Lubbock County, Texas. This is one I mentioned here. This is one of two sites where we did exposure assessments that were for private wells. So the first four that I talked about were all municipal water systems. Our Texas sites and Alaska sites were all private wells. So we have expect maybe a broader spread in concentrations because the concentrations in individual wells differ throughout the sample area whereas with the municipal water systems we may have had a couple of different water systems. We expect that the people who are all being served by those municipal systems are getting similar concentrations to one another. Here in Lubbock County we had 214 people participate with 24 children from 96 households. The dates here of the water mitigated by September of 2019, that's just the last state that we had any well sampling that was above EPA's Lifetime Health Advisory. That was happening in phases here at this site. And again, these levels that we're reporting here are the maximum levels reported in any of the wells in this community were PFOS just over 900 parts per trillion, PFOA at 3,900 and PFHxS at just over 1,200. Move on to the next slide. You'll see the results here. We do have PFHxS at 6 compared to, sorry, the number isn't showing up here, it's 1.2 for the general population. So 6 for our Lubbock County exposure assessment site, 1.2 for the general population. But for PFOS here in Lubbock County, we're actually lower than the general population, the 4.2 compared to 4.7. And for PFOA, 2.2 compared to 1.6 in the results here. Move to the next slide. And again, here for PFOS, we show our Lubbock County site being the lowest of any of these exposed populations and even lower than the general population with our Lubbock County set at 4.2 compared to 8.6 in Portsmouth. The next slide, PFHxS where we had 6.0 in Lubbock compared to 4.1 in Portsmouth. And then the next slide. We have 2.2 micrograms per liter for PFOA in Lubbock compared to 3.1 in Portsmouth. We can go on to the next slide. At this

point, we still have a fair amount of work in front of us, even though the fieldwork is complete. We are going to be sending out our individual test results and sharing summary results similar to what I've shared here for these five sites with our remaining communities in Alaska, New York and Colorado. We're also continuing to evaluate all of the data collected from the sites including the biological data, environmental data and our questionnaire data to better understand exposure in each of the communities. Looking at things like occupational differences, age, gender, length of residency, environmental exposure and several other questions that were included in our exposure questionnaire. We are writing individual reports for each of those sites that we'll present the findings and any associations that we found between the serum concentrations and any environmental exposure questions for our environmental measurements as well as a final report combining the findings from all of the sites that we'll be able to do some of the comparisons that I know people are all going to be really interested in. You know, what are the differences between the sites? What are the factors for a given site that really controlled the measurements of PFAS in the blood? And we're going to be holding information sessions that talk with community members in each of the communities as well and share the findings from the individual site report as far as answer any questions that they might have. Go to the next slide. So I'll pause, or I'll stop here, and I'm happy to take questions. Hopefully, this was informative for the group. I know that there are probably going to be some questions that we're just not at a point where we can answer yet. Where we're looking at the specific associations between any of the exposure factors or the exposure questions and these serum concentrations. But as the reports are developed and released, that's when we'll have answers. And if it's appropriate, I'm happy to come back or have another person come back at some point in the future to present that type of information we send out. You all may be interested in that as well. Thank you for your attention. I'll take any questions.

CDR MUTTER: Thanks, Brad, appreciate it. Any questions for Brad?

MR. OSGOOD: I have one about sites. All those sites AFFF foam, was that the source, or is there other sources?

DR. GOODWIN: Yeah, the expectation for all of these sites is that AFFF is at least a contributing source. There may be other sources in addition, but we in our site selection, we were trying to ensure that all of the sites were AAAF as one exposure.

MS. AMICO: I have a few questions. First of all, thank you very much. That was very informative. I really appreciated the graphs that you included Portsmouth in there. It helped make it relevant to our community as well, so I really appreciate your presentation. Do you, I don't know if you said this or not, but do you have a timeline of when, and so it sounds like all the individual, you said the fieldwork is done. You're working on still individual reports and then there'll be a final report. Do you have a timeline of when we can expect the final report from all of this work?

DR. GOODWIN: Yeah, you know, pre-COVID our timeline was to try and get that by September of 2021. I think that we're probably going to be delayed from that. Our fieldwork was delayed by about six months due to COVID, and our lab reporting is going to be delayed somewhat longer than six months because of some diminished capacity to analyze samples at the lab. So I don't have a firm timeline. But, you know, it's going to be more than six months before we have that final report.

MS. AMICO: Okay. Thank you. I'm just curious if you can tell us how communities that have had this done and have received the results, how are they reacting to this information? Are you getting a lot of concerns from people? Are you getting questions from local healthcare providers? I'm just curious how, you know, the results of this, how it's going over in the communities.

DR. GOODWIN: So I will say that we haven't had a ton of questions related to the results. We have had some. People have certainly been interested. We've tried to provide some information along with this and providing presentations for healthcare providers in the area. Because we are encouraging people to talk to their doctors about these results if they have questions. Now, some of that may be that these, the results reporting got started in May. And there have been a lot of other things on people's minds, a lot of other things that local health departments and physicians have been dealing with since then. So I don't know what the response would have been if these results would have started going on pre-COVID. But I will say that it hasn't been, we haven't been getting flooded with questions. We've been getting sort of a steady trickle. But I think that other more pressing concerns have jumped to the top of line. It's my interpretation of that. But that's kind of the general picture. I will say that the levels of engagement in the communities have differed pretty widely. We've had some communities beforehand that were very engaged. We had lots of people interested. We were able to recruit. And some communities that were less engaged. And that was more of a challenge to

raise awareness of the work and then we haven't had as much interaction in those communities afterwards.

MS. AMICO: Okay, great. Thank you. A couple other questions. So you said something about older adults having higher levels of PFAS. I'm just curious, you did have children participate in the study but obviously not large numbers of children. But I'm just curious, I know at least from my own personal experience, my kids' levels or my daughter, she had really high levels even compared to the average at Pease. So I'm just curious if you're also seeing, you know, children with more elevated levels. You had mentioned older adults. I'm just curious if you're seeing higher levels in children.

DR. GOODWIN: Yeah, so the number of children at each of the sites have been relatively small, so it's been difficult to do a really robust analysis for children on a site by site basis. That is something that we hope that by pooling the children from across the sites that we'll be able to have some more, a larger dataset to draw conclusions, and that would be included in the final report. But I don't have anything to share on that just yet.

MS. AMICO: Okay great. Two more questions. So in terms of recruitment, do you have any strategies that you can share with us about how, you know, it sounds like you were recruiting during the pandemic, right. You got some people to give samples. Was there anything that worked really well at any of these sites or didn't work well that you can share with us as we struggle to also get recruitment, getting people to sign up.

DR. GOODWIN: Yep. I don't have any magic bullets for recruitment during the pandemic. I will say that one of the communities that we were recruiting in during the pandemic, we had a really, really hard time. And we're not going to have very many participants in one of those final three sites. We tried to do the same types of things that we had done before. But they, you know, I think that community was probably going to be one of the harder ones, and the pandemic just made it even harder. The communities I think that we did have relatively good luck in recruiting from during the pandemic were the ones that were more engaged ahead of time and the ones that had a better awareness of the issue. And so getting out and just being limited in how much we could go door to door and have those in person interactions was certainly a learning experience. And I see Dr. Breyse has raised his hand.

DR. BREYSSE: So Brad, maybe you could say a few words about the difference here that we tried to get a representative sample

here. So we identified homes to reach out to rather than just kind of advertising for anybody who wants to come down and participate. Which is kind of how we're working in Pease. So probably the things that work in exposure assessments are not necessarily going to translate into the Pease recruitment therefore.

CDR MUTTER: Yeah, there's really not --

DR. GOODWIN: Yeah, that's correct.

CDR MUTTER: right Brad.

DR. GOODWIN: Yeah, so in some of our communities that are smaller like our Alaska community, for example, we needed to invite everyone from the community to try and get to our potential sample size. But in most of the communities, we identified households randomly ahead of time and then targeted those households for participation. So we weren't able to accept volunteers from outside of that group of preselected households. We did try and select more households than we originally intended to try and get higher participation numbers. But it wasn't the same type of recruitment where anyone in the area was eligible to participate. So we did go out with targeted mailings, targeted door to door knocking, getting phone numbers and making phone calls. But we had a limited pool of addresses to do that [inaudible].

MS. AMICO: That's a good point for sure. I guess my last question would just be what do you, what do you plan to do with this information when everything is said and done? Like how do you anticipate this will inform future work or future plans that ATSDR has now that you have all this exposure assessment data, you know? Are you thinking about next steps or anything that this might contribute to in the future?

DR. GOODWIN: I think we're looking forward to figuring out whether there are any environmental factors or answers to exposure questions that jump out as predictors of concentrations of PFAS in blood, looking at the mixtures of PFAS in blood and understanding how that differs from site to site from location to location to know if there are any ways to predict where we might expect more exposure or less. And trying to lead this into the health study at Pease and the Multi-site Study that need to share that information so we can have that better understanding of these exposures and identify whether there's anything else going on there. I know Pat, it looked like you wanted to say something there too.

DR. BREYSSE: Yeah. So, you know, Andrea we've talked about this before the challenges of offering biomonitoring to anybody who wants it. And just, you know, the lack of resources and the lack of, you know, medical insurance to pay for it to get that done. And so what we're hoping to do is by doing this in a systematic way and looking at all these factors that Brad talked about, we've been able to inform people who didn't get their blood sample, something about what their PFAS levels might be. So everybody should benefit from that, whether they participated or not, because we're trying to be systematic and trying to understand these determinants. So that'll help inform people whether they got their blood sampled or not. And by doing it this way, we can also come back in time and we can look and see how things change over time. And we can also look at what the determinants of high exposure are and then target those people and those conditions maybe for some more detailed work as well going forward. So this could inform future health studies. It could inform, you know, future biomonitoring studies. And it'll also serve the public health function of informing the community about what the spectrum of exposures are and what's unique about those exposures. So you saw from Brad's discussion that there are profiles of these PFAS compounds that are not the same across all these sites. That's telling us something. And we got to figure out what that's telling us, because, I mean there might be something else going on at sites that have a different profile. And so we're going to follow up on all that. And so this is not the end of the story for us.

MR. DIPENTIMA: I have a question.

CDR MUTTER: So, Rich, can I hold you for a second. I see John Durant's hand has been raised for just a minute. I'll get to you next, Rich. Thank you.

DR. DURANT: Hi, thank you. Can you hear me okay?

CDR MUTTER: Yes, we can hear you.

DR. DURANT: Great, thanks. So I just had a question about the concentrations reporting in the water samples. Could you just comment a little bit about where they came from? Are these averages over time? Are these the samples sort of collected as close as possible to when the blood samples were drawn? What's the relationship there?

DR. GOODWIN: So the water concentrations that I had reported on the slides were the maximum concentrations that were measured in each of these communities before any cleanup happened.

DR. DURANT: I see. So these weren't individualized water samples. These are just community water samples.

DR. GOODWIN: Yes. You know, we did water sampling from a subset of the participants in the exposure assessment as part of the work. But the samples that we went out to collect were all post-cleanup. And so we weren't expecting to see high levels of PFAS, and that's what we found that the cleanup had largely been affected.

DR. BREYSSE: Brad, most of the data we used came from the EPA through the unregulated contaminant monitoring rules data. Is that true?

DR. GOODWIN: Most of it came from EPA. DoD shared some data with us as well, especially for the private well communities and for some of the smaller systems where they had done some sampling as well.

CDR MUTTER: Thank you, Brad. John, did you have any follow up questions?

DR. DURANT: No, thank you, thank you.

CDR MUTTER: Okay, wonderful. Rich.

MR. DIPENTIMA: Yes, I had just a bureaucratic question, I guess. I noticed there's a disclaimer on the bottom here that says the conclusions are a report of the authors not necessarily that of CDC and the ATSDR. Does this report not go through the clearance process of the CDC and ATSDR before it's released? And why would it not be an official document of those agencies?

DR. GOODWIN: So that disclaimer has to go on all of our presentations here. Pat or Jamie, do you want to address when that comes off in the future?

DR. BREYSSE: Yeah. We have a final report that has been, you know, cleared in peer review. At that point, we'll stand behind it. But for now, this is all still preliminary. And that's a standard boilerplate language that CDC asks us to put on stuff. But I assure you, we stand behind these results. But they aren't final yet. And you know, our final story will be in the approved report that gets peer reviewed and published on our website, you know, when we're all said and done.

CDR MUTTER: Thank you. Laurel.

DR. SCHAIDER: Hi, thanks for your presentation, Brad. I was curious beyond the three PFAS compounds you presented on, are there others that were present at high levels in the water and

were frequently found in the water, thinking of pharmacokinetic modeling and that your dataset could be helpful for other compounds beyond just these three.

DR. GOODWIN: Yeah, in most cases, we didn't have sampling for other compounds in the water. In a lot of cases, in some, we didn't even have it for PFHxS. So we don't have a lot of information on what other PFAS were in the water, but nothing else that had been monitored for had jumped out.

DR. SCHAIDER: And how about in the blood data. Were there others that showed up frequently in any of the communities?

DR. GOODWIN: There were other things that were detected. Had some of those on the slides. Most of them were detected at about the same levels as in the general population. Things like PFNA, PFDA, the longer chain legacy compounds.

CDR MUTTER: Thank you, Laurel. Any other questions for Brad on exposure assessment?

MS. AMICO: Jamie, I have a couple more. Actually, I don't know if this more or a question for Dr. Breyse, but you had something about how not everyone can participate in this program and that hopefully, this data will help inform others. Do you expect, or I don't know if expect is the right word, but do you think that potentially out of this work that some type of calculator or something could be used to help communities that don't have access to blood testing but know their PFAS levels? Are you expecting that from this work, like some calculator or tool like that could be developed to help impact the community members to determine what their levels might be?

DR. BREYSSE: We really haven't used that word yet, but I think that's exactly what we're thinking of doing. Trying to come up with some criteria that will allow people to figure out where they would fit on the spectrum of data.

MS. AMICO: Right, great, thanks. And in terms of, you know, seeing the different profiles, I'm not sure how you labeled it, but obviously, varying levels of different PFAS at different sites, even though they're all AFFF, have you been able to kind of match that with any type of known AFFF mixtures? Do you have access to like what was in different AFFFs so you can try to compare what's in the blood of these communities versus what was in the foam that was maybe used that contaminated their water?

DR. GOODWIN: So, we do know that there are different formulations in the AFFF. What we don't know is which ones were used at what locations and in what proportions and at what

times. So that's the information that would be pretty hard to get there than some, they all have different half lives in the body. And so trying to get to recreate that from what we have I think would be pretty difficult. We, you know, we are going to be looking at the mixtures of the PFAS that were measured in the blood at the different sites. Say, you know, for example that the Texas site that didn't have much PFOS compared to the other species that there may have been something different about the AFFF that was used there. We're also going to have to take into account how long it's been, because you know, the half life for PFHxS is likely the longest of these. So it may be an indicator of the time since the exposure was happening in addition to the mixture of what types of compounds were there.

DR. BREYSSE: And Andrea, that's a great question. And as we learn more like this, we will go back to DoD and see if they can get us any information. They haven't been able to yet because it's these all-purpose records, you know, and how far back do they have them. And in many cases they don't know what exactly the profile chemicals are. They bent this stuff out for performance specification not necessarily for a composition specification. So they might not have that information. But I also caution you that it might not be just that there's different PFAS formulations with AFFF. There could be other things here that are not AFFF. You know, there's lots of industrial uses for these chemicals. And these military bases are complex and in many cases have industrial-like activities. Sometimes there's industries around the military bases. So there could be other sources of PFAS in the waters that are not AFFF-related as well, which is something else we're considering.

MS. AMICO: I mean is that something, was part of this process a questionnaire where you asked those questions about are there local landfills or factories or whatever?

DR. BREYSSE: We're doing a big mapping exercise here. We're trying to look at what we think the industries are around the site, if we can get proof from that. The EPA has a big database of PFASs, prospector releasing sites that we're tapping into as well. That's all stuff that we're looking at.

CDR MUTTER: Thank you. I want to jump to Alayna.

MS. DAVIS: Hi. I was actually wondering, and it's actually piggybacking on what Dr. Breyse was talking about. Was any data collected related to what types of areas use the PFAS chemicals like similar to Pease where we had a fire training area and, you know, we had some releases due to a plane crash and things like that? Is any of that data collected at any of these exposure

sites so that you can maybe correlate that to maybe similar levels in the water or the blood later on if that can be analyzed?

DR. GOODWIN: We didn't collect that as part of this process. We do have some information about, you know, plane crashes in certain areas or spills at sites. But in a lot of cases, the exposure is likely due to just prolonged use in training. But there are a couple of locations that have more site-specific events.

CDR MUTTER: Okay, thank you. Laurel.

DR. SCHAIDER: Yeah, I had one more question for Brad. I'm trying to remember, and maybe you mentioned this, but for the exposure assessments, were there other household measurements like dust or anything getting at other exposures. I seem to remember like 10% of houses had some other exposure measures throughout the timeline for those and what you might learn especially for communities, you know, where water mitigation has been in place for a while, and more recent exposures might be more related in part to consumer products or other sources of exposure.

DR. GOODWIN: Yeah, we did do indoor dust and tap water measurements. We tried to get it from 10% of the households at each site. The indoor dust data are somewhat exploratory. There aren't good comparison values, so we're trying to evaluate those data. We're trying to understand what that might mean in terms of exposure. We did have some questions getting at other types of exposure sources or use of some consumer products, some diet-related questions. And we're also working with EPA on a follow on project to try and get a little more information about those types of things.

DR. SCHAIDER: That's great to know. Will that questionnaire that was used be shared with the Multi-site Study teams?

DR. GOODWIN: Yeah, the questionnaire, certainly available for Multi-site Study teams. It's based on the questionnaire in our PFAS Exposure Assessment Technical Tools. I think that the Multi-site folks are all aware of the questionnaire that we had. And as we get more results, we can share with them if there were any specific questions that were particularly useful or places where we feel like it might have been nice to have some additional information.

DR. SCHAIDER: Great, thanks.

CDR MUTTER: Thank you, any more questions for Brad on exposure assessment. Okay, just making sure there's no hands raised one

last time. Okay, thank you, Brad. We appreciate your time tonight. Great presentation.

DR. GOODWIN: Thank you.

CAP CONCERNS

CDR MUTTER: Okay, I do want to circle back around to see if we have any questions from the audience. So if you are in the audience and you have a question, if you could type in the chat or raise your hand, we'll be happy to wait a few seconds to see if we have any questions. And if we don't, that's okay too. I just wanted to give you one more opportunity. Okay, so I'm seeing none again, so we'll just move on. And I'll keep an eye on that to see if anybody changes their mind. The next thing we have up is CAP concerns. Is there any concerns the CAP members would like to raise that we haven't already covered on the agenda?

MS. AMICO: Yep, this is Andrea. I just was wondering. I know we've talked over the last year about the intersection of PFAS and COVID, which I think is a very relevant issue. And I was wondering if someone from ATSDR could give us an update in terms of where you may be at at looking at how those two things intersect. And, you know I think, particularly around vaccines and, you know, I read things in some articles about there's been some mention of potentially PFAS impacting communities getting a third vaccine. You know, the current vaccine is required too. Just because we know that PFAS can impact immune function. And so I was hoping ATSDR could give us an update on their work looking at PFAS and COVID and any thoughts they have around vaccinations and effectiveness of vaccinations and any future work that may be going into looking at that as the country continues to roll out mass vaccinations in all the states.

DR. BREYSSE: Do you want me to take that on, Jamie?

CDR MUTTER: Yes sir, please.

DR. BREYSSE: Yeah, so way back when this started you guys asked us to look into it. And at that point, we started having discussions with Philippe Grandjean about his work before he published it. And we started talking to the COVID team at CDC and HHS at the time. And what we started doing is a couple of studies we're looking at the first question which is what's the relationship between PFAS and your likelihood of getting the disease or the severity. And we're doing that, taking advantage of a couple of opportunities. So the first opportunity is

there's a study that's being done at CDC to look at healthcare providers, first responders and COVID-19. Obviously, that's a high impact group of COVID-19. And we talked to them, and we've agreed that we will add some PFAS measurements to the blood work that they're doing. So it have a lot of detail about the exposures and the disease profile of these people. And so we'll be in a position once our laboratory gets up and running again and we get the blood samples from the study to look and see if there's a relationship between their disease experience and PFAS levels. So that's the first, that was probably the most readily available opportunity we had to add some PFAS work to the COVID response. The second thing we're looking at now, this is a little bit more developmental at this point, is do we have, while the first study we had all this disease, COVID disease work done, and we added PFAS to it. We have all these people we know a lot about PFAS. We don't know a lot about their COVID disease experience. And so we're developing a questionnaire. We're looking for permission to submit it and the same permission we've always talked about is what we have to go through for that. And we hope to send a questionnaire around to the people who we've recruited for our studies and ask them about their COVID disease experience. Now, that's limitation is it's all going to be self-reported data. But we'll have a, we know we'll have a lot of people with very high PFAS levels. We're not quite sure in the first responder court that I mentioned for a study, what the range of PFAS exposures are going to be in these people. So if they all have low PFAS, that's not going to be a very informative study. On the other hand, we have this group where we have a lot of range of exposure, including some very high exposures, but what we're limited to right now is just asking them about the COVID disease experience. So those are two things that we're doing right now. The first one, we already have permission to do. We've identified resources to do. We're waiting to get the blood, and we're waiting to free up our lab who can do it. The second one, we're developing questionnaire and we're getting permissions in place to get that one in the field. Now the third question is going to be tougher right now, so you know, and the country right now is aggressively putting the vaccines out. And quite frankly, we've backed off of it because the CDC staff right now is very stressed in trying to get the vaccine out in the first place. But as soon as things get a little relaxed, we're going to talk to them about opportunities to think about the way we can look at the vaccine efficacy at PFAS levels. So right now, there is no plans to do anything different for people who have high PFAS levels. Remembering, you know, even in a community that's got high levels in the water, you can have people who

have very low PFAS and very high PFAS in the community. So just being in an area that's got contaminated water doesn't necessarily tell you exactly what your PFAS levels are going forward. So, that'll be a bigger issue to look into. We're figuring out, you know, what the best way to do that is going forward. But unfortunately, you know, we're trying to, you know, build the bus as the bus is driving down the road in this case. So that's a bit of a challenge for us.

MS. AMICO: Great, thank you. So I would say to the last point, you know, I certainly understand the CDC being stressed and trying to roll out the vaccines, but I also think wanting to know if the vaccines are effective is, I think, critically important right now, because I think a lot of people are putting a lot of faith in the vaccines and helping us to get back to normal. So if we find that, you know, or if we don't look to see if they're effective, especially in communities that we know have PFAS exposure, and they may not be as effective, I mean that to me is concerning as we try to get out of this pandemic and move back towards somewhat normalcy in our lives. So I understand. I'm appreciative that you're looking for opportunities. I think my response would be that I think that needs to have a sense of urgency on it right now in terms of --

DR. BREYSSE: So the number one, you know, first order issue they're dealing with right now through the vaccine is whether it's efficacious against all these variants that are emerging. And so they're focusing on that, you know, with a lot of urgency right now. So for obvious reasons right now. So our infectious disease specialists are most worried about that. And they see, they would see the PFAS work as maybe be secondary to something like that going forth. But I assure you we're going to do everything we can within the resources we have and the constraints we have to mount an effective public health response.

MS. AMICO: Okay. Thank you. Going back to your first point about studying healthcare, studying like PFAS levels in healthcare workers that have had COVID, a few questions that I have is do you know, or are these first responders, are they going to be representative of the nation, or are they from a certain area of the nation?

DR. BREYSSE: Oh, they're from a certain area. Can anybody remind me, I'm thinking they're from the desert Southwest.

CDR MUTTER: Rachel, do you have any information?

DR. ROGERS: Yeah, hi everybody. I'm sorry to be joining late, but I can help with that question. The participants for the study that we'll be doing, the PFAS sub-study for as recruiting participants from a number of sites across the country, the first responder portion of the study that's specifically recruiting firefighters will be coming largely from Arizona.

MS. AMICO: Okay. Do you know how many people are part of that study?

DR. ROGERS: I don't have that number off the top of my head, but I can find out for you.

MS. AMICO: Okay. And then lastly, is there a timeline as to when you think that you would be able to test this blood for PFAS and take a look at, you know, the relationship between their COVID disease and their PFAS levels. And are you expecting to write a report on that? Like how are we going to be informed of the results of this information?

DR. ROGERS: Pat, do you want to take that?

DR. BREYSSE: Yeah. So I'm not sure what the timeline is exactly. You know, the two hurdles we have to overcome are first of all, so right now the blood work that's being collected as a part of this study is looking at some vaccine efficacy issues. And so there might actually be an opportunity here, but we don't want to commit to that. But and then our laboratory is right now on very limited staff going forward. And so it's hard to commit to when the lab will be available to do the work. It'll be on the top of the list when they get back in there going forward. And then we will write a report, and we'll publish it. I'm not quite sure what the venue will be, but this might be a perfect article for the MMWR, which is the CDC's flagship publication opportunity. And rest assured that we will let all our community engagement groups aware of the results when it comes out. We will not quietly release those results.

MS. AMICO: Okay, thank you. My final question is around the second point where you're sending out questionnaires. Is that to exposure assessments sites only? Is that the Multi-site Study sites, you know, only? Or is that like all of them? Like where are the questionnaires going?

DR. BREYSSE: I believe it's our exposure assessment sites. Because we already have all that work in hand. And those are people we recruited. The way we set up the Multi-site Study is each site is essentially responsible for their own work. And so and they haven't recruited anybody yet. So right now we have I

think a nice pool of people that we can send a questionnaire to on the order of a couple thousand if I remember correctly.

DR. ROGERS: Yeah, we're thinking the ceiling is probably somewhere around 4,000 at this point.

DR. BREYSSE: Four thousand.

MS. AMICO: Thank you.

CDR MUTTER: All right are there any other questions or concerns before we wrap up the meeting? Okay. Last chance. Okay guys.

DR. BREYSSE: Thanks everybody.

CDR MUTTER: No pause, Andrea, I see a question.

MS. AMICO: I just want to talk about the Pease Study in terms of we have [inaudible] in mind. I know, obviously, we closed for a while. We've reopened and recruitment has been slow. I know there's never been like a final date. It's just been like let's try to get those numbers that we need. But has anyone given any thought to a final date or because we're in the pandemic we can just assume that it's going to remain open? And, you know, hopefully we can start ramping up even more efforts to get people in when, you know, it's a little bit safer to do so. Not that it's not safe now, but when we see the numbers continue to trend down. So I'm just curious, do we have like a certain date in mind?

CDR MUTTER: Frank, do you want to take that? Or would you like -
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DR. BREYSSE: Yeah, thank you. I'm not aware of what it is, yeah.

CDR MUTTER: Yeah, we're looking, we're exploring opportunities to extend recruitment. That's what I can say right now.

MS. AMICO: So there is no official date you can give us that you can say regardless of you hitting your numbers, this date the study closes.

CDR MUTTER: Not right now.

MS. AMICO: Okay, that's very reassuring to hear. And you know, again, there's things that we're doing now to work on recruitment, but it's tough right now. You know, it's really tough. So I'm reassured to hear that there's no final date and that we can continue to work to get people in and hopefully see better recruitment as things settle down more. So thank you.

CDR MUTTER: We're fully focused on recruitment at this point and how we can increase that in the months coming up as well. Okay, any other questions? All right thank you everybody. I appreciate your time on a Monday. Okay, thank you. We'll talk soon. Bye

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