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COMMITTEE ON
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UNITED STATES SENATE

HEARING TO RECEIVE TESTIMONY ON THE HEALTH EFFECTS OF EXPOSURE TO AIRBORNE HAZARDS, INCLUDING TOXIC FUMES FROM BURN PITS

Wednesday, March 16, 2022

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U.S. Senate
Subcommittee Personnel
Committee on Armed Services
Washington, D.C.

The committee met, pursuant to notice, at 3:30 p.m. in Room SR-232A, Russell Senate Office Building, Hon. Kirsten Gillibrand, chairman of the subcommittee, presiding.

Committee Members Present: Gillibrand [presiding], Warren, Hirono, Tillis, Hawley, and Tuberville.

OPENING STATEMENT OF HON. KIRSTEN GILLIBRAND, U.S. SENATOR FROM NEW YORK

Senator Gillibrand: Good afternoon, everybody. The Personnel Subcommittee meets today to receive testimony on the health effects of exposure to airborne hazards, including toxic fumes from burn pits. Let me start by welcoming Ranking Member Tillis, who will be here very shortly, who has been an excellent partner on this subcommittee over the last several years. Senator Tillis and I have shared a commitment to supporting our servicemembers and providing them with the services, resources, and care that they need.

That commitment extends to our shared drive to address the debilitating and extensive medical issues and disabilities caused by the use of burn pits in recent combat operations. When our servicemembers deploy they expect to face risks, but those risks should not come from the operations of our own bases, and when they do, we must take responsibility. I look forward to continuing to work together on this issue.

I was also glad to hear that President Biden prioritized addressing this cost of war in the State of the Union, and again in Texas last week. He described the clear cause and effect of this crisis saying, quote, "The burn pits that incinerate the waste of war, medical and hazardous

material, jet fuel, and so much more were just dug in big pits, not far from where our veterans were sleeping. And when our troops came home, the fittest among them, the greatest fighting force in the history of the world, too many of them were not the same -- headaches, numbness, dizziness, cancer." That tells the whole story. Men and women who deployed at the peak of physical fitness are now fighting to survive.

This is a health crisis among our armed services. Most public attention on this issue has been focused on the treatment of veterans at the Veterans Administration, but these health issues stem from time on active duty and can begin presenting while our troops are still serving. The DoD has a critical role to play in protecting the health of our current and transitioning servicemembers. That is why today's hearing is so critical. We need to have a better understanding of how toxic exposure has been and is being tracked and documented, and the barriers that have presented that documentation from being done effectively.

Congress has already recognized DoD's responsibility and has passed legislation to require DoD to take appropriate measures, including requiring inclusion of exposure to open burn pits in post-deployment health assessments of servicemembers returning from deployment, recording burn pit registration in electronic health

records, and mandatory training for military health care providers on the effects of burn pit exposure.

But we need to go further. We need to build an understanding of the health impacts of toxic exposure and our knowledge of when such exposure is occurring, and we must make that information available to servicemembers, their families, and the medical professionals they rely on in order to properly and adequately care for our troops who have been exposed.

As President Biden said, quote, "We need to know more about which of our veterans may have been exposed to burn pits in the first place or other environmental toxins during their service, and record possible exposure before servicemembers separate from the military," end quote.

Today's witnesses will help provide clarity in both of those areas. Our first panel consists of DoD witnesses who will testify about the health effects of toxic exposure, assessment of health impacts, documentation of potential exposure, and monitoring of exposure. Witnesses on our second panel will share what they have seen or experienced firsthand on this issue and will provide recommendations for ensuring the health and safety of our servicemembers.

Witnesses for our first panel include Dr. Terry M. Rauch, Acting Deputy Assistant Secretary of Defense for Health Readiness Policy and Oversight; Dr. Raul Mirza,

Division Chief of Occupational and Environmental Medicine, Clinical Public Health, and Epidemiology, U.S. Army Public Health Center; Colonel Adam J. Newell, Chief of Medical Readiness, Air Force Medical Readiness Agency; and Captain Brian L. Feldman, Commander, Navy and Marine Corps Public Health Center.

I will introduce the second panel after we receive the testimony of the first panel. Again, thank you for being here today, and just for Senator Tillis' benefit, I told him how wonderful you are at the opening of my remarks.

STATEMENT OF HON. THOM TILLIS, U.S. SENATOR FROM NORTH CAROLINA

Senator Tillis: Could you please repeat that? And I am sorry I am running late. I went ahead and voted so I figured we could tag team and not disrupt the hearing. But thank you all for being here. Senator Gillibrand, thank you for holding the hearing and your advocacy of the work that I am well of in veterans' affairs, that we need to continue to work on.

I have worked on this subject for a long time when I first came to the Senate. I was involved with trying to get the presumptions in place for Camp Lejeune, toxic exposures down there. Fortunately, after a lot of back and forth with the VA we were successful, but we have more work to do.

And I am happy that the Veterans Affairs Committee has unanimously reported out a bill on toxic substances. We are going to continue to work in the VA Committee to do right by those who were exposed and who are now in veteran status.

The objective of today's hearing, though -- and it is something that I have said on a number of fronts, whether it is traumatic brain injury, low-level concussive events, things that men and women, while they are on active status, experience that could ultimately result in problems in the long term -- I think we have an opportunity here to get ahead of it. Instead of waiting for the next burn pit, or

waiting for the next Agent Orange, what more can we do downrange? What more can we do in our military installations to understand the potential risk that we are putting our men and women, potentially putting them in a position to where they too are going to have negative health consequences, either while they are serving or after they transition to veteran status.

So today I look forward to talking with you all about how we can get ahead of the curve, how we can do a better job of tracking potential exposures so that it makes it very easy later on, if we get into a situation. We cannot always, when we are downrange, know what we are going to get exposed to, but once we know it then we should make sure that every single electronic health record of any man or woman who is exposed to it is updated, and maybe we can even anticipate that they are at risk before they ever exhibit the first symptom. That is the end goal, and I am sure that you all, the witnesses, agree that that should be an end goal of everybody.

So I look forward to this testimony today. I look forward to moving up in the cycle, talking with the DoD to figure out what more we can do to actually begin to bend the curve on some of the consequences that we have to deal with, with our men and women in uniform, and with the men and women who have served before.

So thank you all. I look forward to your testimony.

Senator Gillibrand: Colonel Newell? Dr. Rauch?

STATEMENT OF TERRY RAUCH, PhD, ACTING DEPUTY ASSISTANT SECRETARY OF DEFENSE FOR HEALTH READINESS POLICY AND OVERSIGHT

Mr. Rauch: Chairwoman Gillibrand, Ranking Member Tillis, and members of the subcommittee, thank you for inviting the Department to testify for the Senate Armed Services Committee hearing on military exposures of concern, including airborne hazards and open burn pits. I am pleased to represent the Office of the Secretary of Defense and have the oppy to discuss the Department's actions in addressing airborne contaminants and open burn pits in military options, and the potential health effects to our servicemembers and veterans.

Joining me today and representing their military departments are Colonel Newell from the Air Force, Dr. Mirza from the Army, and Captain Feldman from the Navy.

The Department recognizes the concerns about the potential health impact of burn pits and other airborne exposures. The relationship between burn pit exposure and illness is a topic of active research by the Department, the VA, National Academies of Science, Engineering, and Medicine, and other research institutions. The Department and VA continue to support and fund these research efforts to better understand any health effects that will better inform the health care provided to our servicemembers and

veterans.

Health care providers play a critical role in understanding health-related exposures and becoming proficient in assessing patients' exposure concerns. This month, the Department will launch an updated version of its Airborne Hazards and Open Burn Pit Registry Overview course for health care providers. In addition to the training course, an Airborne Exposure Clinical Toolbox is available to our health care providers.

The Department and the VA continue to share education, training, and outreach products to improve exposure-related clinical care. Airborne hazards pose potential acute and chronic health effects during deployment and post-deployment. As such, the Department has enhanced its pre- and post-deployment-related health assessments and the Separation Health Assessment to include more specific occupational and environmental exposure questions, including questions on burn pits and other airborne hazards.

The Department and VA are currently collaborating on multiple efforts, including the development of the first-ever Individual Longitudinal Exposure Record -- we call it the ILER -- providing exposure summaries by leveraging personnel location, environmental monitoring and health assessment data. The Department is also conducting a comprehensive exposure monitoring capabilities-based

assessment aimed at improving individual and area exposure monitoring and record-keeping across the installation, training, and deployed environments.

In closing, the Department remains committed to continually improving our understanding of exposures of concern and potential health effects in order to prevent and mitigate exposures and clinically assess, treat, and care for our servicemembers and veterans.

Madam Chairwoman, that concludes my opening remark, and we stand ready to address your questions.

[The joint prepared statement of Mr. Rauch, Dr. Mirza, Colonel Newell, and Captain Feldman follows:]

Senator Gillibrand: Thank you, so much, Dr. Rauch.

Dr. Rauch, what does DoD do in the field to track toxic exposure for individual servicemembers, and are there any innovative ways the Department is working to do so?

Mr. Rauch: Thank you for the question. I will start off and my colleagues can provide any more detail.

It primarily starts, if we are talking about the deployed environment, it primarily starts onsite with our preventive medicine teams that are collecting environmental data, whether it be airborne data, soil data, water data. And all of that data that is being collected -- and it does, obviously, include data that is generated from military operations, to include burn pits, where there are -- that data is collected by our preventive medicine units. It is captured in a large database called DOEHRS, and specific to DOEHRS, it is called DOEHRS-IH. IH stands for "industrial hygiene." And that database will then become available to then feed into the ILER, which is the longitudinal exposure record, and in addition, the ILER will not only scrape environmental health assessment data from DOEHRS, it will also scrape data from personnel location. So you can match the individual servicemember and his or her location to the environmental health data that is being captured in DOEHRS, and then ILER will present that data in what we call a joint longitudinal viewer and summarize that data for the health

care professional. So he or she will be able to see where that servicemember was, at any point in time, what they were exposed to, and be able to --

Senator Gillibrand: What is the time point this data starts, data going back to what point in time?

Mr. Rauch: Well, preventive medicine units are part of the deployed force, and so they could be doing their environmental health basis on a weekly basis, they could be hanging air monitor --

Senator Gillibrand: But when did you start collecting this data?

Mr. Rauch: When I was on active duty in 1999, we were collecting it in Bosnia and Kosovo, so it has been a while.

Senator Gillibrand: Great. Now you mentioned also -- so you have it back to 1999, at least, and you said there are active burn pits today that you are monitoring. Where are those burn pits located?

Mr. Rauch: It is my understanding that there are active burn pits in the CENTCOM area of operations. I can get with CENTCOM and we can provide more detailed information.

Senator Gillibrand: Yes, please. Because I understood that the DoD now, as a matter of policy, has determined that they will no longer use burn pits as a way to dispose of waste. So if that is not the case I just need to know that.

And second, I would like to know all existing burn pits that members of the military are being exposed to today, because that would be of great concern.

Mr. Rauch: I will get with CENTCOM. I will provide that information. By policy, by DoD directive, we only will use burn pits when it is a military operational necessity. Everything else, the COCOM, the way he or she manages that waste, will not be managed by open burn pits.

Senator Gillibrand: So have they determined that all past burn pits of the last 20 years were operationally necessary?

Mr. Rauch: Can you repeat that question?

Senator Gillibrand: Have they already determined that the hundreds of burn pits that were used in the past were all operationally necessary?

Mr. Rauch: Burn pits that were used in the past were used because when you establish a base camp in an immature theater, and each servicemember in the deployed force is generating 10 pounds or more of waste every day, and you have 300 to 3,000, that is a lot of daily waste, and we have to manage it somehow. And in an immature theater, before you can install incinerators or contract to have it removed, burn pits were used.

Senator Gillibrand: Understood. And then my final question, which I think you answered, but what is the

process that is currently being used by DoD and each of your services to determine whether a servicemember returning from deployment has been exposed to toxic fumes from burn pits during his deployment, and how and where is that information recorded, and who is given access to that information? Is it shared with the VA? And I think answered that question in the beginning. Could you just restate the answer?

Mr. Rauch: Yeah. So there a number of ways that it is captured. We have a pre-deployment assessment and a post-deployment assessment, and that includes questions on airborne hazards, location exposure. And, in addition, we have the separation assessment, which also includes similar questions on health hazards and airborne contamination and location. And the separation assessment is sent to the VA with the servicemember. And, in addition, all of that is captured in databases that is captured under ILER.

Senator Gillibrand: And you believe that this data has been captured to at least since 1999.

Mr. Rauch: The airborne monitoring that I am talking about, that we did at Camp Bondsteel and other areas of Kosovo were stationary air monitors. We did not have the current systems and databases that we have today. I mean, we were writing it down on paper and pencil, the data, back then. Now it is all captured electronically.

Senator Gillibrand: So can you provide for the

committee what years you have environmental data for air quality in different deployments around the globe?

Mr. Rauch: Sure. Of course.

Senator Gillibrand: Thank you.

Mr. Rauch: And it would go back before 1999.

Senator Gillibrand: It would?

Mr. Rauch: Oh yes.

Senator Gillibrand: Okay. So that is excellent.

Mr. Rauch: I mean, we were doing it in the first Gulf War.

Senator Gillibrand: So we can get that information. So if we wanted to know air quality at K2 we could get air quality from K2?

Mr. Rauch: If I can get air quality at K2, I should be able to, yes.

Senator Gillibrand: Okay. So that is kind of information we need, because we know where there were open burn pits from testimony of our servicemembers, and if we can get air quality from those locations it will make their ability for the DoD to fully understand that exposure did take place, because we have that data. Thank you.

Mr. Rauch: I understand.

Senator Gillibrand: Thank you.

Senator Tillis: Thank you, Chairman. Thank you all for being here. I wanted to go back. You were saying, in

1999, I am sure that sensors have changed dramatically since then. So give me an idea now about the training for preventative medicine personnel about the nature of the sensors, whether or not we are considering -- I know these are area sensors, probably -- but what is the state of the art or the state of thinking in the DoD for wearable sensors, those sorts of things, so that we can track it down to the potential exposures of an individual in a situation?

Mr. Rauch: Thank you, Senator. I will start that answer off and then I am going to defer to my colleagues to add a little bit more detail from their perspective.

We are very interested in wearables. The reason is because our emphasis, our focus really needs to be on individual exposure monitoring. The things that I was talking about before, the data that we are capturing out of the environment --

Senator Tillis: More macro level?

Mr. Rauch: There you go. And so, you know, you are going to have 100 or 30 or more individuals, and that data is very difficult to pinpoint exactly what an individual was exposed to. And, you know, there is kind of an old saying in science, "It all matters to dose response." And if we cannot figure out what the dose of the exposure was, and what they were exposed to, then it is very difficult to, you know, capture their response.

I will defer to my colleagues on their preventative medicine units and how they train, and the technology that they use. Captain?

Captain Feldman: Thank you, Senator. A couple of different things from Navy Medicine. We are very proud of our forward-deployed preventive medicine units. They are agile, expeditionary teams that have quite a robust capability. So for example, they have got portable sampling devices that are now part of a tri-service, standardized program. They support all services. In fact, they have been deployed with the Army mostly, including currently. But those devices can conduct a pretty comprehensive evaluation of soil, air, water, water vapor, at an individual, portable level device having a static sensor. So that is a robust capability that is really cutting edge.

With regard to wearables, one unique thing that Navy Medicine is doing with research and development, we have got some very robust submarine atmospheric monitoring, quite a robust and safe program, and R&D is looking at silicone bands, wearables, that you can get individual level exposure data on a submarine.

In addition to that, our research labs in Dayton have an Environmental Health Directorate that are looking at biomarkers and other correlates, translating from animal models, that will help us in the future get down to

individual-level exposure.

Senator Tillis: Colonel, do you have anything to add?

Colonel Newell: Thank you, Senator. For the Department of the Air Force it is very similar. We are looking into wearables. We have not instituted them yet but there are in development.

Senator Tillis: Dr. Mirza?

Dr. Mirza: Sir, thank you for the opportunity. Myself, like my colleagues, we are also very interested in wearable technology. I think it is also important to underscore that the Army preventative medicine detachments are quite skilled and equipped to conduct the ambient samplings that they do as part of missions when they are forward deployed. Certainly air quality is not the exclusive issue of concern as well as other environmental issues, such as vector-borne diseases, pest control management, communicable diseases, and they are equipped and trained in that respect with environmental engineers, scientists, and also complementary clinical staff and public health and preventive medicine that are able to provide adjunctive and consultive support on-site, and not only within the PM community but also for all providers that are downrange.

And so it is a pretty synchronized and robust capability that the Army provides in a contingency operation

to assess exposures and respond to them.

Senator Tillis: You know, I think one of the reasons why we should focus so much on wearables is we get an atomic view of exposures, and then hopefully, as a part of the process that is being captured in the electronic health record of the individual servicemember and ultimately being transferred to the electronic health record for the veteran, now that we have a joint office for the Cerner implementation for the VA electronic health record.

I think it is going to be very important to have a seamless transition. And then hopefully we get to a point, if you are able to capture enough data, to where we can apply predictive analytics to maybe identify an exposure long before any symptoms have manifested themselves.

Dr. Rauch, did you have something to add?

Mr. Rauch: Well, I would also add, Senator, that in addition to wearables we need to understand more about how the individual responds to environmental exposures. What risks do they bring, other backgrounds, lifestyle factors such as, are you smoking a pack a day, you know, before you deployed, other lifestyle factors, or even what genetic background individuals bring. We need to understand those because they are going to have an impact. And the science is not there yet but we are pursuing it.

Senator Tillis: [Presiding.] Thank you. Senator

Hawley.

Senator Hawley: Thank you, Senator Tillis. Dr. Rauch, if I could just start with you. You testified in your written testimony that since 2001, over 4 million now veterans as well as DoD civilians and DoD contractors deployed to the Southwest Asia theater of operations. How many of these individuals would have been exposed to airborne hazards, including toxic exposures from burn pits? Do you know? In that time frame.

Mr. Rauch: Well, I cannot imagine that -- all of them should have been exposed to some types of airborne hazards if they were deployed in various base camps and environments in Southwest Asia, because Southwest Asia, just the military operational environment -- vehicles, burn pits, everything else, to include sandstorms created a lot of potential for airborne hazards. And if you are there, you are exposed to it.

Senator Hawley: What is DoD's estimate for the number of individuals who would qualify for the presumption of service-related connection, given how many individuals were exposed, and so on?

Mr. Rauch: I have got to take that for the record. I will get you as much detail as I can, but I cannot get that to you off the top of my head, Senator.

Senator Hawley: That is fine. We will take it for the

record and I will look forward to your answer.

What was the practice of burn pits in other theaters during this period of time, from 2001 forward? Do you know, Dr. Rauch, aside, that is, Southwest Asia?

Mr. Rauch: What other burn pits in other combatant commands?

Senator Hawley: Mm-hmm.

Mr. Rauch: I will take it for the record. Most of them should have been in the CENTCOM AOR, though.

Senator Hawley: Okay. So if they are in the CENTCOM AOR then they are in this same region that we have been talking about, roughly.

Tell me about DoD's collection of this data. I mean, we are dealing with servicemembers' exposure to toxins, burn pit toxins, other airbornes. It seems like we have very limited data for a lot of this. Why is that? Why is it the DoD has not collected this kind of data for so long? Can you give me any insight?

Mr. Rauch: Well, I think we have always improved on the extent of the data and the technologies that we collect the data with, and we continue to improve. I mean, we collect a lot of environmental health assessment data, you know, the number of compounds and the number of airborne compounds, particulate matter, compounds that are in the motor pool over there, the compounds in the soil that get

aerosolized as a result of operations. A lot of that is collected, and it goes into a database that we call DOEHRS, and DOEHRS is a large database that can then feed into ILER, which is what I was talking about, which is Individual Longitudinal Exposure Record, that pinpoints the location of the servicemember with all of that environmental data. And, therefore, the health care provider can take a look and get kind of a summary of where the servicemember was, what the environmental hazards were in that area, and can best form a treatment regime for that servicemember.

Senator Hawley: What about data available for assessing the linkages between exposure that we have been talking about, to airborne toxins, including particularly from burn pits, and certain kinds of illnesses? What has DoD been doing to improve data collection on that score, and data analysis?

Mr. Rauch: Well, so it is a part of the data that we already collect, by preventive medicine units, and store in our databases. But linking those exposures to illnesses has been somewhat challenging. A couple of years ago, the National Academy of Sciences said that there is consistent data from exposures in Southwest Asia to our deployed force and illnesses such as persistent cough, asthma, and a few other respiratory disorders.

More data is needed, and more specific data linking

individuals to certain airborne hazards and their health outcomes is needed to be able to expand that list.

Senator Hawley: I will circle back to you on the questions for the record. I will probably have a few more as well. Thank you, Mr. Chairman.

Senator Tillis: Just a couple of follow-ups. Senator Gillibrand went to vote. She is probably waiting on the second vote to be called. I am kind of curious about when ILER will be fully interoperable with DoD electronic health record and the VA's electronic health record. What is the timeline?

Mr. Rauch: Yeah, the timeline for full capability is 2023, but it is capable now but a little bit less limited.

Senator Tillis: With the DoD electronic health record, because I guess the VA electronic health record is in a multiyear implementation, so that would probably have to track along with their ultimate build-out?

Mr. Rauch: That is my understanding.

Senator Tillis: Okay. Tell me a little bit about DoD-funded research on taking the information that we have about potentially toxic exposures and making certain presumptions about how that exposure could have caused a bad outcome for a servicemember, so-called presumptions.

Mr. Rauch: Sure. So with regard to human studies, most of the human studies, human research that we sponsor,

and continue to sponsor, really compares a group of deployers to a control group of non-deployers, to take a look at location, environmental health assessments, what were the threats over there, and then look at the differences in terms of the incidence of health outcomes between the deployed force in that area and the control or non-deployers.

In addition to that, we also have experiments. We have animal experiments at the Air Force, at Wright Patt, up at the 711th, which are looking at exposure to experimental animals of different airborne hazards, to include compounds that you would see in burn pits and also airborne sand and dust that you would see in that deployed environment, and looking at the health effects, health outcomes in experimental animals.

Those are just a few. If my colleagues want to add anything, please do.

Senator Tillis: Captain?

Captain Feldman: Thank you, Senator. I am aware of a lot of work by the Navy Medical Research Command and the Naval Health Research Center, which is based in San Diego. They have got, in addition to collaborating with the VA on these studies they have got a Millennium Cohort, which is a powerful source of an extremely large population that is allowing them to explore all of these questions. I will

defer to my colleagues before getting into specifics. Thank you.

Colonel Newell: We already -- thank you, Senator -- we already know that there are a lot of medical symptoms and diseases that are associated with open burn pits and other airborne toxins, but it is difficult to find a direct link to those at this time. But there are many studies that are underway that are looking into that, and hopefully in the future we will be able to link that.

I think the important thing with the ILER is the ILER captures the data, it links it to the individual, and it also capture data from when the individual returns from deployment, and asks them specifically if they have any symptoms or have any concerns with airborne hazards or chemicals. And so if they answer that to the affirmative there is always a provider that is going to talk to them one-on-one and address that with them.

They also have a post-deployment health assessment that occurs 90 to 180 days after they get back, and it is the same questions. They ask them, do you have any symptoms or any concerns you have with airborne hazards and chemicals, and once again, if those are answered in the affirmative then the provider gets with them and they talk to them.

Again, during the preventative health assessment that specifically goes into those questions again, and this is

something that every member of the Department of Air Force gets annually. They ask the same questions and they also go into the Open Burn Pit Registry. They courage all members to register for that if they have been in a deployed area with an open burn pit. Even if they do not have any symptoms or any concerns they are encouraged to go ahead and register for that. And once again, a provider will reach back and talk with them and go over any questions or concerns that they might have.

Senator Tillis: Dr. Mirza?

Dr. Mirza: Thank you, Senator. In our organization, at the Army Public Health Center, we have engaged in several epidemiological studies, and in those studies we essentially use deployment history as a proxy for exposures. And so, of course, that can include exposures to burn pits but also to the poor air quality conditions within the area of operations. And we also take that information and we look at the health status of those individuals before they deployed and after they deployed, to make determinations about whether or not associations existed for particular respiratory disorders of interest.

What we have found is that these epidemiological studies are not always very conclusive, and a lot of that has to do with limitations of the study, because we do not necessarily have individualized exposure information tied to

individuals and their health outcomes. That is significant limitation.

But what we do have the strongest evidence to suggest is that respiratory symptoms are present in many deployers into the CENTCOM area of operations, as a function of the air quality issues that are there. So their symptoms are like shortness of breath, cough, phlegm production, decrements in their ability to successfully pass their physical performance tests, and things of that nature. And so we have that information.

Other studies have been conducted looking at deployers themselves, and looking at them prospectively, how they have been managed clinically and what conditions they have suffered as a consequence of their deployment, particularly looking at respiratory conditions. A small study that was conducted looked at those particular deployers and determined about half of those individuals did not have necessarily diagnosable respiratory conditions per se, despite the fact that they had symptoms that they complained about, but the other half seemed to have symptoms consistent with asthma and hyperreactivity of the airway and such.

So the bottom line is there has been a lot of studying occurring about deployers and their respiratory health and the potential associations that exist with their deployment, but based on limitations on exposure data it is very

difficult to make strong conclusions about the source of exposure and those health outcomes.

Senator Tillis: Thank you.

Senator Gillibrand: [Presiding.] The Department's prepared statement for this hearing states that peer-reviewed published research documents that military personnel deployed to Iraq and Afghanistan appeared to experience elevated rates of acute upper respiratory symptoms during deployment and may be at greater risk for post-deployment respiratory symptoms and respiratory illnesses. Dr. Mirza, Dr. Newell, and Dr. Feldman, please describe what your service does to ensure that servicemembers concerned about potential health effects of exposure to airborne hazards receive appropriate health care, and is this care documented in their health records, and will this information be available to the VA when the servicemember leaves service and receives care through the VA?

Colonel Newell: Senator, thank you for that question. I will walk you through essentially a process that we undertake. First, when individuals are in a deployed environment and they are suffering with any respiratory illness -- let me take a step back -- any illness or any symptoms, we have medical personnel, we have medical centers that are deployed, or MTFs that are deployed there with the

personnel to respond to those concerns. Those get documented and are available throughout the course of that servicemember's service treatment record, to be looked at prospectively.

When these individuals redeploy, they come back home, they undergo post-deployment health assessment, and there are essentially two parts to that. One is a screening questionnaire, in which these individuals self-report concerns about their health, their respiratory symptoms, and other organ-associated symptomatology of interest, and we also ask about their concerns about environmental exposures, a whole scope of exposures, not necessarily airborne but chemical and so on.

Once they complete that self-assessment these individuals then are evaluated by a provider and they are given that option for a focused medical evaluation, based on any concerns that they have advocated for on that self-assessment.

Routinely, we conduct periodic health assessments. This has a couple of purposes. The first is to assure that individuals are assessed annually, that they maintain the medical standards and a certain level of physical fitness to be able to do their job. The second is to also identify any health outcomes or health issues of personal concern that need to be evaluated and managed further, either by a

primary care provider or a specialist that is going to be referred in for their care. But also as a function of that periodic health assessment, it is an additional opportunity to ascertain any personal concerns that individual may have about exposures within the environment in which they operate, soldier, or deployed to.

And so, you know, essentially there are three main points of care, in my view, in which these individuals are evaluated, is downrange if they are experiencing symptoms, it is when they return home, as a function of the post-deployment health assessment process, and it is also at least annually, on a periodic basis, when they are going through a period health assessment.

Captain Feldman: [Off microphone] -- but that information comes back as the deployers come home, with both their pre- and post-deployment surveys and periodic health assessments and there are specific questions that are verbally reviewed on this questionnaire to ensure that dialogue happens with the clinician. If you know you were exposed to a location it is in the registry. If those clinicians do not have the expertise in their primary care [inaudible] environmental health specialists, industrial health hygiene specialists who consult with those clinicians are available. In addition to that [inaudible] are another layer of consultative expertise for those specific questions

that, when a patient comes to a clinic visit and has that concern, those are resources that [inaudible] that individual patient.

Senator Gillibrand: Thank you, and Colonel Newell.

Colonel Newell: Thank you, Senator. I agree with my colleagues. I will just add on that the ILER does report those specific questions that we ask about airborne hazards, and so it pulls that. So not only are you looking at the occupational environmental health risk assessments of when the member was downrange, multiple times, and you are reviewing those exposures, it is taking those little bits of questions that the member has answered regarding airborne hazards from the post-deployment health assessment and the periodic health assessment.

And we also have a new separation health assessment that has been under development for the last year. It should be released this fall. And it also goes into detail about airborne hazards and chemicals of that nature, and that will also be documented.

Senator Gillibrand: Thank you. Any further questions?

Senator Tillis: Just one. I just want to echo Senator Gillibrand, or re-emphasize Senator Gillibrand on current active burn pits. Some of the process that led to these being operationally necessary I think would be very helpful for the committee.

Thank you for being here.

Senator Gillibrand: Thank you very much for your testimony. I welcome the second panel to come up. Thank you very much.

[Pause.]

Senator Gillibrand: I now welcome the second panel, Dr. Anthony M. Szema, Director, International Center of Excellence in Deployment Health and Medical Geosciences, Northwell Health Foundation; Mr. Tom Porter, Executive Vice President for Government Affairs, Iraq and Afghanistan Veterans of America; Mrs. Rosie Torres, Executive Director, Burn Pits 360; and Mr. Steven Patterson, Former Environmental Science Officer, Combined Joint Task Force, 101 Headquarters, Afghanistan, from 2008 to 2009.

Thank you so much, and each of you can give you opening statements. Dr. Szema, you can go first.

STATEMENT OF ANTHONY SZEMA, Medicare, DIRECTOR, INTERNATIONAL CENTER OF EXCELLENCE IN DEPLOYMENT HEALTH AND GEOSCIENCES, NORTHWELL HEALTH FOUNDATION

Dr. Szema: Thank you, Chair Gillibrand, Ranking Member Tillis, members of the Personnel Subcommittee of the Senate Armed Services Committee for the opportunity to participate in today's hearing.

Between 1998 and 2015, I was Allergy Section Chief, Veterans Affairs Medical Center, Northport, New York, and my expertise on this issue stems from the following. My team first reported new-onset asthma among soldiers to Iraq and Afghanistan with exposure to burn pits in 2007. We described deployment-related rhinitis in 2008; coined the term Iraq Afghanistan War Lung Injury, IAW-LI, in 2011, based on lung function testing data; developed animal models with burn pit-based dust in 2014; tested candidate drugs in these mice in 2018; and co-invented new candidate medicines this year.

I am testifying because as a physician I care about the health and well-being of my patients who are our soldiers. The team in my office sees numerous patients post-deployment with a variety of symptoms, which include shortness of breath, cough, and chest pain which is accentuated with exercise. I have diagnosed post-burn pit-exposed soldiers with asthma, non-smoking-related accelerated COPD,

constrictive bronchiolitis, carbonaceous burned lung, titanium lung, lung fibrosis, bladder cancer, and pulmonary ossification, or bone in the lung. In one severe case, for example, one of my patients with lung fibrosis underwent two lung transplants. He just died in December.

As an expert in the field I have concluded that these lung disorders are directly related to exposure to airborne hazards, including burn pits, dust storms, improvised explosive devices, and blast-over pressure from mortar-fired rounds.

As doctors treating these patients, one challenge we face is that there is inadequate screening of these military personnel, who are predisposed to lung injury. Lack of screening means they never get diagnosed, they get diagnosed late, or they get diagnosed when it is irreversible.

The dilemma with military personnel who typically do not have asthma, who pass basic training outdoors, whose masks must be fit for deployment at Fort Hood, is that they do not have pre-deployment pulmonary assessments, unlike the Fire Department of New York, which was able to determine lung function reduction after 9/11. An otherwise healthy soldier who has 100 predicted pre-deployment who goes down to 80 percent has a significant decrease.

Another challenge we face is that doctors treating these servicemembers is a lack of information we receive.

Without knowing what they are exposed to or potentially exposed to it is hard to prove what caused the ailment. For example, last month one patient of mine was denied a consult to the East Orange War-Related Illness and Injury Center because the local VA doctor said he did not believe that that military firefighter's sleep apnea, sinusitis, asthma, and rhinitis were related to deployment, even though he had a positive sleep study during active service.

Even if it is known that there are toxic materials at certain sites, often soldiers visit our academic center without complete documentation of locations of their deployment, so their direct exposure cannot be proven. This is especially the case if they were at forward operating bases like Camp Stryker, whose exact location is not on the map.

I have several recommendations to address these challenges and ensure we are taking care of our servicemembers. One, conduct breathing tests before and after deployment. Two, revamp the DoD method of documenting locations where military personnel serve. Three, utilize newer technology such as wearable particle monitors.

First, by conducting tests before and after deployment we can determine if there is a reduction in lung function much earlier than if we wait. In addition, these data will better enable screening protocols to identify who are

soldiers at risk.

Second, by revamping the DoD method of documenting locations where military personnel service we will have a better understanding of what they are exposed to, a better understanding of the illness and how to treat it.

Third, by utilizing newer technology such as wearable particle monitors with GPS, we will be able to assess a given soldier's exposure and location. By utilizing this for a contingent of military personnel, the DoD will be better able to move troops to regions of safety, away from airborne hazards. If exposure does happen, it would also provide critical information for treatment.

We know that screening and monitoring programs have been extremely effective for those victims of the World Trade Center disaster post-9/11, and this is an analogous exposure with JP-8 and burn pits. It is our sacred duty to care for the women and men who sacrifice their lives for our freedom.

[The prepared statement of Dr. Szema follows:]

Senator Gillibrand: Thank you, Dr. Szema. Mr. Porter?

STATEMENT OF TOM PORTER, EXECUTIVE VICE PRESIDENT, GOVERNMENT AFFAIRS, IRAQ AND AFGHANISTAN VETERANS OF AMERICA

Mr. Porter: Thank you for having us here, Senator Gillibrand and Senator Tillis. I appreciate everything you are doing on this issue.

I would like to introduce my daughter, 13-year-old daughter here, Elizabeth Porter. She is playing hooky from school today, so hopefully she gets something out of this.

On a more serious note, I want to take this opportunity to say that my thoughts and prayers are with Dr. Kate Hendricks Thomas, advocate on this issue. She is going through a very particularly tough time with regard to her burn pit-related illness.

So I am here not only as an IAVA advocate but as one who was exposed to a variety of airborne toxins from burn pits and other sources while I was deployed. Before I went downrange I had completely healthy lungs. Shortly after I arrived in Kabul, in 2010, where the air was particularly bad, my lungs had a severe reaction and became infected. It was controlled with medication, but I was diagnosed with asthma as soon as I got back home a year later. But I have to still take the medications to keep breathing.

Exposure to burn pits used by military to destroy medical and human waste, chemicals, petroleum, other trash, it has been widespread. We have talked about this a lot

here already. It is not just burn pits. You could learn a lot from those who have served in Kabul, for example. It is an enormous city without a modern sewage system. Many who served there are suffering the impacts from breathing airborne feces for extended periods of time, and there are also burn pits there, at many of the bases in that city alone.

At every location where U.S. and coalition military were stationed there were many port-o-johns. It was somebody's job to pull out that metal bin from the port-o-john every day, douse it with jet fuel, and burn it down to a brick, and that is how you get rid of the port-o-john waste. And it is somebody's job to do that, and I do not need to describe it, but it is a particularly nasty job.

The military and veteran community know all too well how detrimental these toxic exposures can be. I will refer to our new Member Survey that is just out this month, for 2022. We survey our members. Eighty-two percent of our members say they experienced toxic exposures during their service. Of those, 90 percent say they have or may have symptoms as a result. Of the 82 percent who were exposed, just 53 percent said they had their exposures documented in their DoD Periodic Health Assessments, so just 53 percent.

This data shows the enormous percentage of those who are suffering service-related exposures, especially

considering the estimate the VA has of as many as 3.5 million that could have been exposed.

When IAVA saw similar data in a previous Member Survey we conceived of and worked hard to pass the Burn Pits Accountability Act that was passed in 2020, within the NDAA. The law required servicemembers to be evaluated for exposures during routine health exams. Servicemembers were required to be enrolled in the Burn Pit Registry, unless they opt out, f they suffered exposures or if they were stationed near a burn pit.

Seventy-six percent of IAVA members were aware of the registry but only 59 percent are registered in it. DoD must maximize its efforts to ensure all who are eligible get enrolled, not just informed of it, as the law requires. It requires them to be enrolled in the registry, and that is the intent behind the law in the first place, and we know this because we worked to develop the bill and passed it.

IAVA would like DoD to confirm if the letter and intent of the Burn Pits Accountability Act is being executed, including whether servicemembers are actually being required to enroll in the registry, or simply being advised of its existence.

We heard a lot of talk already today about the ILER database. That is really critical, we believe. That would help inform servicemembers, veterans, and the medical

providers of the exposures by your location and the time you were deployed. I think we heard that it was supposed to be operational in 2023, September of 2023 is what I understand. We supported legislation that required that veterans have access to their ILER database online. So hopefully that stays on track for implementation by September 2023, and we would like your assistance to try to ensure that that happens.

There has also been some talk in the news about the Red Hill fuel storage facility in Hawaii. This is another toxic exposure, so it is not all burn pits. We want to make sure that the DoD documents those exposures to not only the servicemembers that are serving there now but have been dislocated, but then also those that have been impacted over the life of the fuel storage facility. That is important. How are they going to be doing that?

Serving in the military is tough on one's body. I do not think that is surprising to anybody here. Although not specific to toxic exposures, a significant indicator of IAVA members' health, when asked in our Member Survey how they would rate their overall health before joining the military, 91 percent rated their health as excellent or good. When asked how they rated their heath after they left the military, just 33 percent said it was excellent or good.

The military service can be hard and cause adverse

health impacts. It is not a surprise. But those who may want to encourage their sons and daughters to enter the military except that if one does suffer injuries our government will care for them when they come home. Failure to care for the many who suffered toxic exposures many diminish the value of military service in the public's eyes, and by refusing to satisfy our obligations to them we communicate to current and future servicemembers that we do not actually have their backs.

So on behalf of the 3.5 million servicemembers and veterans who may have suffered toxic exposures I implore you to ensure that DoD follows recently enacted laws meant to increase transparency and information-sharing with those who have suffered exposures and to spare no effort in not only anticipating new hazards our personnel may encounter but advise them of their known risks ahead of time so they and medical professionals are better equipped to address emergent health impacts.

Again, thank you very much for having me today, and I am happy to answer any questions.

[The prepared statement of Mr. Porter follows:]

Senator Gillibrand: Thank you. Mrs. Torres?

STATEMENT OF ROSIE TORRES, EXECUTIVE DIRECTOR, BURN PITS 360

Mrs. Torres: Thank you, Chairwoman Gillibrand, Ranking Member Tillis, and members of the subcommittee for today's hearing and for this opportunity to testify.

It seems like yesterday when some Members of Congress believed that the health risks of toxic exposures and burn pits were based on anecdotal evidence. While we have data today that shows otherwise, I am here to tell you personally about the stories of the men and women who bravely defended our country, exposed to toxic chemicals that for many cost them their life.

My story begins with my husband, Retired Captain, Le Roy Torres, who served as a Texas State Trooper for 14 years and as a soldier for 23 years before being medically retired. He deployed to Balad, Iraq, from 2007 to 2008, where he was exposed to the largest burn pit within the Operation Iraqi Freedom theater of operations, which was the size of approximately a football field. He lived and worked next to the toxic plume of black smoke that infiltrated where they lived, ate, and slept.

He returned home from war to face a health care system that failed him, and an employer too afraid to understand an uncommon war injury, resulting in termination of his law enforcement career. As a result of these injustices, Le Roy

attempted to end his life in 2016.

Since returning from Iraq he has had over 400 medical visits, until he was finally diagnosed with autoimmune disease, toxic brain injury, and constrictive bronchiolitis following a lung biopsy at Vanderbilt University. The VA and DoD refused to recognize or diagnose these environmental injuries, often misdiagnosing them as psychosomatic or dismissing them as compensation-driven care-seeking. The more veterans we talk to, the more we heard about stories like Le Roy's. This is why, 12 years ago, Le Roy and I co-founded Burn Pits 360, a nonprofit that advocates for veterans, servicemembers, and families of the fallen affected by toxic exposures.

We created a health registry of about 10,000 participants to track their exposures, diseases, and deaths, working with doctors like Dr. Szema. We then joined in Washington and gathered with other families to pass the Airborne Hazards Open Burn Pit Registry Act of 2013.

We have been too far too many funerals and counseled countless wives, husbands, and children left alone by our government's failure to treat our nation's veterans. Burn Pits 360 has persevered through the years, despite the indifference of the VA, DoD, and Congress. Instead of providing them with treatment, early cancer diagnostics, and benefits, our government spent the last years telling

veterans there is no evidence that inhaling toxic black smoke causes respiratory illnesses and cancer that their stories are anecdotes and not data, and that treating them is too costly. I cannot help but wonder what is the cost of their lives and sacrifice?

So now more than ever we need to pass legislation that addresses presumption. The time is well past due for the President, the Department of Defense, Veteran Affairs to acknowledge these injuries and disease as a direct result of armed conflict or caused by an instrumentality of war. We are asking for the Department of Defense and Veteran Affairs to honor these injuries with compassionate common sense. This is an invitation to begin the healing process for these families who have lost loved ones to illness or death following the environmental hardships of war.

Yet Le Roy's story is not the only one. Sergeant Thomas Joseph Sullivan served with the United States Marines in Iraq. He suffered from intestinal ulcerations and bleeding, hypertension, respiratory disease, asthma, and liver disorder. Tom died in 2009 at 30 years old.

Will Thompson served with the U.S. Army for 23 years and was deployed twice to Iraq. His doctors treated his cough as allergies. He was later diagnosed with pneumonia, treated with antibiotics, and sent home. Eventually he was diagnosed with pulmonary fibrosis. After a lung biopsy he

was informed that he had titanium, magnesium, iron, and silica in his lungs. Will underwent two transplants and passed away this December at 50 years old.

Lieutenant Colonel Dan Brewer, CENTCOM Environmental Officer, deployed to Afghanistan and warned his supervisors about the health effects of the black fumes caused by burning of waste and plastic at night.

Lastly, Isiah James served with the U.S. Army, deployed to Iraq 2006 to 2008, 2008 to 2009, in Afghanistan, 2010 to 2011. And Isiah says this. He is now suffering from lung disease and is on supplemental oxygen. He says, "It is my hope you not only listen to the testimony but to hear it, to feel it, to understand it, and most importantly, to act on it. History is the ultimate judge, and we in this country have not always done best by those who send in our stead. I believe it was Churchill who said, 'Never has so much been owed to so few, by so many.' How will you be judged and how will America and the American people pay their debt?"

[The prepared statement of Mrs. Torres follows:]

Senator Gillibrand: Thank you. Mr. Patterson?

STATEMENT OF STEVEN PATTERSON, FORMER ENVIRONMENTAL SCIENCE OFFICER, COMBINED JOINT TASK FORCE 101 HEADQUARTERS, AFGHANISTAN, 2008-2009

Mr. Patterson: Senators, thank you for this opportunity. I am Steven Patterson, a retired environmental science and engineering officer. This falls into the larger preventive medicine community that was mentioned earlier.

I am here today to assist you with your understand of burn pits, environmental health exposures, and how those were documented. Primarily, I can speak to the time of 2008 to 2009, when I was a senior environmental science officer for Combined Joint Task Force 101 while it was the headquarters for Afghanistan. In this position, I traveled the nation extensively and saw most of the locations where U.S. forces were deployed. My job was to conserve the fighting force and identify environmental health exposures.

The deployed environment is very challenging, and it is very difficult to document a person's exposure in such a setting. The equipment to identify and quantify exposures is often lacking as are trained personnel, especially in remote locations. This is made more difficult as we often have exposures which one would not anticipate, as well as the challenge of accurately placing a certain person in a location at a given time. This is made worse when attempting to look back 10 or 20 years as camp names often

changed and the personnel system does not operate down to the person.

Almost all of the locations I visited had burn pits operating at that time, and few, if any, separated their waste before burning it, so many contained pressure treated lumber, galvanized metal, significant quantities of plastics, and lithium batteries. These were not pits, but simply low-lying areas where the waste was thrown and burned. Typically, they smoldered a great deal which is important as the combustion is not complete, more toxic compounds may form, and these toxins will not be lifted away so stay in or near the air around the camp.

Most of these burn pits were within the perimeter fence for security reasons, or very close to the perimeter if outside of the camp. Most of the small camps had few, if any, air samples taken at them due to limited personnel, equipment, transportation challenges, and time.

We had roughly 20 people to attempt to document the environmental exposures of over 37,000 people spread over an area roughly the size of Texas. However, I do not think that more environmental health people are the ideal solution.

The limited environmental health data, mostly air samples with some soil and water samples, cannot be linked to a person but only to a location, and even if the person

can confirm that they were at that location it does not mean that they had that exposure. Their exposures could have been much worse or much better than that sample indicated.

The DoD has this responsibility and must address it as industry likely will not do so as they do not face these particular challenges. We have struggled in this space since Desert Storm, and we must look at different options moving forward. We must leverage technology and address policy issues to fix these gaps.

Some possible options to consider:

One, creation of a Joint Program Executive Office in order to focus the research and funding on environmental health surveillance while also providing a central location to hold responsible in the future.

Two, silicone brackets could be provided to servicemembers to track their exposures, as mentioned earlier. These have been shown to capture more than 1,500 different chemical compounds and would allow us to mitigate exposures much sooner while also providing the servicemember with personal exposure data.

Three, research and build a replacement for the silicone bracelet which would provide near real-time information on exposures and dose for a service member.

Four, create a repository of frozen soil samples from each deployment location so they may be tested in the future

as needed when new concerns are identified.

Five, improve the personnel reporting system so that each individual can be located rather than their unit headquarters which may be hundreds of miles away from them. This will allow for individual exposures to be more accurately documented.

Six, remote sensing should be researched to address gaps in environmental surveillance. This will be key for small teams operating in remote areas or dense urban environments which may never have an environmental health professional visit them.

Seven, further research biomarker monitoring to document exposures a person had during their deployment or over their military career.

Finally, eight, educate leaders on the hazards of toxic exposures and hold them responsible if they needlessly expose their people.

Thank you for your time. I am open to any questions.

[The prepared statement of Mr. Patterson follows:]

Senator Gillibrand: Thank you. Senator Tillis?

Senator Tillis: Thank you all for being here. I guess you heard the testimony -- I think most of you were in the room -- during the first panel. It sounds as if there is consensus on one of the questions that I brought up, on individualized monitoring and sensors. But speaking for active duty, Mrs. Torres, I do a lot of work, I serve on the VA Committee. We have got a lot of work to do and we are making progress. And again, I want to give Senator Gillibrand credit for focusing on that issue. We are going to make more progress there. I am sorry for the situation with your husband and for the others that you mentioned.

But with respect to what we need to do better upstream, how would you judge the DoD in making a priority, the priorities that you all have delineated in your opening comments? Where are they falling short?

Mrs. Torres: My team applied for a congressionally directed medical research program grant, funded by the DoD, recently, months ago. We got a great score. This was a for a monitor the size of a beeper that a soldier could wear, that would not only measure particulate matter but even sarin gas, specifically, and gunshot sounds. And despite a good score they said there are no funds. So I do not know why they are asking us to apply for grants if there is no money.

Senator Tillis: Well, that is a question we can get to the bottom of.

Mr. Porter: Thank you, Senator. One of the biggest things, and I mentioned it in the testimony, but one of the biggest problems is we have experienced a big lack of transparency from Federal agencies on what people were exposed to on their deployments. That is the big thing, and I think the ILER is meant to tackle that. It is just a matter of, is it going to be useful to the servicemember and to the veteran. That is key.

Senator Tillis: You also mentioned the idea that the registry is available, but I, for one, think that we should be in an opt-out position, that everybody should be registered in the registry, and if they want to explicitly opt out I supposed they should, but we should probably flip the script on that. Would you agree?

Mr. Porter: Right. The Burn Pit Registry, what the law requires is for them to be entered into it unless they opt not to. So it is not mandatory if you do not want to be in the registry, but the laws that if somebody is exposed or they are stationed next to a burn pit, then they should be entered into the registry.

Mrs. Torres: I agree. I mean, the Burn Pit Registry still falls short in so many ways. It is basically just self-reported data that you could print out and carry

around. But it is important that everyone be a participant of that effort. You know, they do not track mortality, which is, I think, one area that we have talked about for years, Dr. Szema. But I agree, Senator Tillis, that that should be mandated.

Senator Tillis: Mr. Patterson?

Mr. Patterson: Senator, there are so many challenges in this space. The previous individuals talked that so much of it is self-reported. So a 20-year-old individual returns from overseas, and you ask him what happened to him over 15 months. And not to mention the fact that that individual, they are not going to be able to say, "I was exposed to TCE or benzene or toluene." Just, "Some bad stuff happened to me. There was a lot of smoke." They cannot say anything that is going to help that clinician when they end up in the VA system. So so much of what is being done now is just not terribly effective.

Senator Tillis: That is why I get to the need for us to get down to the atomic level sooner rather than later. That is the only way we are really going to be able to capture it, and then have the level of specificity with respect to the specific exposures. So I agree with you all.

We are coming up on the end of a vote. I thank you all for being here. I also appreciate your opening testimony. There were a lot of priorities put in there, and they will

be instructive to me as we move forward. Thank you.

Thank you, Madam Chair.

Senator Gillibrand: Thank you. Mrs. Torres, first of all I want to thank you for your advocacy on behalf servicemembers, veterans, and their families who have suffered debilitating injuries and effects of burn pits. What is the top challenge that you hear from soldiers when they return from deployment about accessing treatment?

Mrs. Torres: Well first of all, Senator, thank you for having me. Lots of challenges. You know, that question just brings up so many ideas in my mind of things that we have tracked through our own private registry. And off the top of my head it is access to health care monitoring, specialized health care, both on the DoD and VA side, but primarily DoD. For those active servicemembers, for those reservists it is a challenge when they do not have trained occupational medicine doctors assessing these underlying issues.

And then secondly is filing for presumption for these illnesses that are underlying. So if you do not have the specialized health care, how can they properly transition them through the compensation and disability process?

Senator Gillibrand: Right. Thank you. What information and resources would be most helpful to the servicemembers you work with when they return from

deployment to ensure they are getting the screening and treatment they need?

Mrs. Torres: I think, you know, definitely mandating that the clinicians be trained, and I think Dr. Szema can help me here, but absolutely having every clinician, every nurse trained in the area of airborne hazards, documenting in the record, you know, in the electronic health record on the VA and the DoD side, that they are identified as having undergone some type of exposure.

And, you know, to say the least, I have had this conversation recently with many people about even just something as small as signage, right? Like during the World Trade Center, there was communication and outreach and signage on "if you are experiencing these issues." People are having to access care through people like Dr. Szema, and they have to fly to New York and fly to Vanderbilt and exhaust their life savings, like our family did. That should not be happening in America. And so we need to start now.

Senator Gillibrand: Thank you very much.

Mr. Porter, thank you for sharing the survey results of your members. Why do you think only 59 percent of IAVA members are registered in the Burn Pits Registry? Dr. Rauch testified as to some of the steps the DoD is taking to increase participation in the registry. Have you seen an

increase in those registered over the years among your members, and what do you think can be done to better encourage more servicemembers and veterans to participate?

Mr. Porter: Thank you for the question. This came up when we developed the Burn Pits Accountability Act a few years ago, because if you look on the VA website it has a running total of those that are registered in it. And at the time when we looked at it, back in 2017, there were only 140,000 entries in the registry. I think it is probably double that now. I have not looked recently. But it was only 140,000, and that is out of, again, VA's estimate is as many as 3.5 million have been exposed. So for only 140,000, that presented a big challenge.

I think that the main problem with that, the reason for that, is because hardly anybody knows about the registry. So through the passage of that bill we talked about it a lot, and we put out a lot of social media on that, and we have also encouraged the VA to do more about that, to get the word out to veterans that this registry is here and then why somebody should be in it. You get, I understand, a free health exam if you are in the system. But again, it is not qualifying somebody for presumption. I think there is a misunderstanding there too. Veterans should apply for their disability, and they are getting turned down, about three-quarters of the people that apply.

Senator Gillibrand: You testified that if the ILER system is done right servicemembers and veterans will have significant transparency into their exposure. What does "done right" mean to you, and what are the critical components of ILER that must be implemented to make a difference in the care servicemembers and veterans receive?

Mr. Porter: Well, what "right" looks like is if somebody was deployed to Balad, Iraq, in 2006, then that ILER should be able to give them the data from what they were probably exposed to in 2006 in Balad. Same thing with me. I traveled around Afghanistan all over the place, so it really can't pinpoint to one location. So that just shows how complex it was. So I traveled around the whole country, frequently, so it would be harder for that.

But again, it should specify what you were exposed to during your deployment, during a set period of time.

Senator Gillibrand: Now I am going to turn it over to Senator Warren, and she is going to chair the meeting while I go vote.

Senator Warren: [Presiding.] So thank you. We are tag-teaming here. I voted early so that I could be here while the chairwoman goes to vote. And I want to say publicly a big thank you to the chairwoman for holding this hearing. I think it is really important. I think it is important that this committee look at the real costs of war,

including where the Department of Defense failed to take steps that were necessary to prevent exposing members of the military to toxic chemicals. I know that many of our witnesses on this panel have been fighting for over a decade for DoD and the VA to recognize how burn pit exposure has had devastating effects on servicemembers' lives.

I know that there is some debate over the data, but it is just common sense that these toxins would cause significant problems to human beings. And it is important for DoD to continue to study this issue, to improve our understanding of the science, but we cannot keep waiting for action. We need to take care of our veterans now -- not later, now.

I know that the focus of today's hearing is DoD's role in determining eligibility for care, not the VA's, but we also have to consider the toll of this entire process on families. So Mrs. Torres, if you do not mind, I would like to be able to ask you about your experiences. I read your testimony. I understand about how hard you have had to fight, how long you have had to fight to get the care that your husband deserves and that other veterans deserve. So if I can let me just ask you a little bit about how this process makes your family feel.

Mrs. Torres: Thank you so much for that question. It has been a journey, a hellish journey, of delay and deny,

not just for myself, the Torres family, but for thousands, possibly millions of families. I know for my husband, being stripped of his integrity and dignity, you know, losing his job, being on the brink of foreclosure, repossession of cars, and you ask yourself, how did we get here and how is this happening in America's backyard, it feels as if the nation has turned its back when you are attempting to just access care. We attempted to access care from both DoD and VA health care institutions, and throughout those 10 years it was always an excuse of there is no science, there is no proof.

And so myself, including, I know, many, many families, maybe to include yours, Tom, is that we have to exhaust our life savings just to access doctors like Dr. Anthony Szema, like Dr. Robert Miller, like the doctors over at National Jewish. Being away from our children that is time lost that will never get back. And so not only does it impact the veteran and spouse but the children.

To this day, to finally see some momentum, as we are seeing now, it really gives us hope.

Senator Warren: Well I am glad to hear you end that on hope, but when you say you feel as if our government, our country, has turned its back on you and your family and thousands, maybe millions of families in the same position, no veteran should feel that way, and no family of a veteran

should feel that way.

You have done a tremendous amount of advocacy related to changing the rules for how veterans must prove they were impacted by burn pits in order to get care. I support you in your work on this. I know it is a hard and lonely journey, but you have done remarkable work here.

So let me see if I can turn this around just a little bit. Mrs. Torres, what would it mean to you and other veterans' families if the rules were changed so that the DoD and the VA believed veterans when they said their health was harmed by burn pits rather than making them jump through so many hoops?

Mrs. Torres: Well, it would remove the burden of proof of us having to be our own lawyers, our own researchers, our own -- all of those things that we have become, right? We have sort of mobilized and congregated online, all sharing that common denominator of delay and deny. So to finally see historic legislation passed so that we do not have to be all those things, so that the Gold Star spouses that call us weekly, expressing how heart-wrenching it is for them to spend the last moments of their loved ones' life gathering buddy statements and evidence when they should be holding the hand and embracing their loved one, it would mean everything to us and to those families that are still struggling to this day, and for those still waiting on an

answer from the VA.

Senator Warren: Well, as I said, I commend you for your advocacy work here. It at least helps us start to move in the right direction. And I appreciate that making a change like this is not inexpensive. There is a lot of money at stake here. And I also understand it is not all in the jurisdiction of this committee. But it is urgent that we treat families, we treat those who are injured without delay. We cannot allow veterans to wait another minute for health care. And so I hope that the work we do here today will help put more momentum behind change.

You know, this committee regularly advocates for spending on weapons that do not work or weapons that are not needed at all. It is inexcusable to claim that we need to balance the budget on the backs of veterans and their families who have been injured. So I hope that what comes out of our work today is that we can give a stronger push on that.

If I can, I have got a few more questions here, questions that the chair also wanted me to ask. Mr. Patterson, if I could ask you about the advances in technology that have been made, and can be made to improve the way that troops' toxic exposure can be documented. Could you say a bit about that please?

Mr. Patterson: Thank you, Senator. As far as advances

since Desert Storm, sadly it has not been very significant. We replaced the miniVOL with another type of particulate matter sampler, but there are still significant challenges. Those samplers simply capture the particulate matter that is in the air, and then you can send it to a lab, and many months later get a report back of what was possibly in that sample.

The downside of that is any volatile organic compounds are not going to be in that sample, because they will have cooked off in the transportation and those months for you to get the sample back. So the progress has been extremely slow and extremely challenging, and I am just looking at my time in from Desert Storm to Afghanistan.

I made some recommendations in my testimony. I believe that the biomarkers have some significant capabilities with them. The silicone bracelets, I think, is an excellent idea, because then we would be able to know much sooner. For instance, in Afghanistan we had formaldehyde-treated lumber from China that we were using to build the small buildings that the soldiers slept in. I had no reason to expect to find formaldehyde in a pristine river valley in Afghanistan. Why is that there? I have no reasons to go look for that.

If we had had those silicone bracelets on those individuals we could have had them back, and there is time

to this. But I would have known quickly rather than a year or two later, what is this, and then we could have mitigated it and I could have protected the next group of soldiers that went in there.

And the remote sensing that I mentioned, I believe is very key moving forward. If we are going to do dispersed operations with small groups, there is a lot of atmospheric analysis that can be done with satellite imagery. It is a bit of an immature space, but if you are talking special operations units that are very small, they are never going to have a preventive medicine person visit them. So that would give you some idea.

And I believe the problem with all of these things is they are not perfect, but they will further the science significantly. And we have been pushing too much for perfect rather than taking some reasonable steps forward.

Senator Warren: And just so I can get the comparison here, can you say a little bit about when you were in Afghanistan in 2008 and 2009, how was an individual's exposure to a burn pit documented?

Mr. Patterson: Senator, some of them were not documented at all, which is a very frustrating point for me. We were operating down in the small FOBs where it might have been a platoon on a FOB, so 50 people, maybe 100 individuals. And with a staff of approximately 20 people

there was no way that I could get them out there to do that surveillance, which should have been done weekly. Ideally you want to do it once a week, rotating, so you never repeat it on the same weekday.

So some of those FOBS, I would grab a soil sample, because that was all that I could do. Those air monitors take 24 hours to capture a sample properly. If you just go and take a grab, it could be very high or very low. You need the coverage over 24 hours.

So a lot of them, there is probably little to no data in the DOEHRS system, which was mentioned earlier, to be able to address that soldier's concerns. The larger compounds fared better. But even then, I cannot tell you what I was exposed to in those 13 months, and this was my job. So for an individual who is ignorant of the space and things they are invulnerable, at 20-something, they are not going to have any idea.

Senator Warren: So let me just ask a follow-on question to that. When servicemembers are headed home, what kind of information were they given about their exposure and what kind of risks they might be facing in the future?

Mr. Patterson: It was all self-reporting, that I recall. Sometimes some units would put something in their medical record that said, "You had a burn pit exposure" or "You had a heavy metal exposure from the location that you

were in." But that was a unit-by-unit situation. And then as mentioned earlier, they asked this 20-year-old, invincible individuals, "What were you exposed to?" "I'm fine. I don't have any problems," and they move out.

Another concern is then those individuals that never end up going to the VA at all. You did your tour, you were 22 years old and bulletproof, and they never went into the VA system. Then they approach the VA 10 or 20 years later. Now they have that much of a tougher upstream fight. And the FOB, the compound names changed constantly. There are some individuals that probably -- you know, that compound no longer existed 5 years later. Quite often they changed every year.

The gentleman talking about being able to link this to an individual's exposure, unless the personnel operating system has changed, that unit identification code links everybody to usually the company level. But if that company operated three sites, with their platoons broken out to those other sites, that data is not accurate for that individual. So there are going to be a lot of challenges, and the further we go back, the more challenges there are going to be with linking people to location to exposure.

Senator Warren: Thank you. Thank you very much, Mr. Patterson.

Mr. Patterson: Thank you, Senator.

Senator Warren: I am going to yield back to the chair. Thank you very much.

Senator Gillibrand: [Presiding.] Thank you all for your testimony today. I think you have really informed the committee what we have to accomplish. I particularly appreciated the specific requests that you have made of this committee, specific changes in the law you would like to see. The benefit of this committee is we are the personnel subcommittee, so we can write these requirements into law for this year's NDAA. And so you have given us really good information about where the system is lacking, why it is not getting the data that it needs, how we actually collect the data we really do need, what is lacking in terms of when our personnel are getting their medical exams, and what the baseline is, and what pre-deployment and post-deployment look like.

I do not know if this was addressed, but did you guys discuss what is the best way to transfer the medical records from active-duty servicemembers to veteran status? And what you would like to see in that transfer of information, and what we might need to create if we do not have it?

Mr. Porter: Sure, Senator. That should work with the electronic health record reform. So when that looks right, which means a seamless transition from the DoD to the VA, and that that servicemember or veteran can have easy access

to that information.

Senator Gillibrand: And access to the ILER system.

Mr. Porter: Yes, ma'am.

Mrs. Torres: And on that point, Senator -- sorry, Tom -- definitely consider making ILER accessible to the survivors. I had one survivor call me and asking assistance in communicating with VA to access ILER, as she was filing for death benefits, and it was difficult because ILER did not date back to the time that he was in service. So lots of challenges there.

Senator Gillibrand: Thank you. And Dr. Szema, you called on DoD to revamp their method of documentation so that medical professionals could have better understanding of their patients' potential exposures. What information would be most helpful to you to have as you screen and treat patients? What obstacles do you face with the patients when you are trying to gather needed information about exposure? And then further, what training do you think should be provided to medical professionals so they can better screen and treat their patients for toxic exposure?

Dr. Szema: We would like to know which region in the country an individual soldier was in, and what types of munitions they were exposed to, what the chemical makeup of the munitions were, how trash was disposed of in that region, including burn pits, what was in the trash itself,

what the weather patterns were, because of dust storms in the region, whether depleted uranium was used in that region -- for example, there are armor-piercing rounds, PGU-14, and tank shells with depleted uranium, as well as even ship ballasts -- and whether that soldier used personal protective equipment. All these things are important.

Regarding training, in the VA system most compensation and pension doctors that we have dealt with in the VA are primary care doctors. They are not pulmonologists. And they are unaware of burn pit issues, which actually is flabbergasting at this point in time. But as I mentioned, last month we had a case where somebody could not go to the War-Related Illness and Injury Center, which has been an arbiter and an advocate for us. So they would go to East Orange VA to confirm what we suspected or wanted a second confirmation of, and one stumbling block is the local VAs are using it as a hurdle to not get them benefits.

Senator Gillibrand: Do you think the VAs need to have pulmonologists on staff?

Dr. Szema: Yes.

Senator Gillibrand: Well, thank you for all your recommendations. I think this panel has been extremely effective in laying out a set of requirements and proposal for how to better address the diseases caused by burn pits and how to document them through active duty, so that when

these individuals become veteran status they have all the information they need to protect them. Because a lot of these diseases take 5 years, or take 7 years, or take 10 years, depending on the length of the service of the individual. And so we need to have that information in place, at the ready, so that when they do go from active duty to veteran status it is part of their record.

We are going to leave this record open for a week, so if there is any testimony that you think of that you would like to give, in terms of recommendations, in terms of data, information, anything else that you want us to have, please submit it. We are really grateful for your advocacy and your testimony today. I think it was thorough and extremely helping in our writing our baseline personnel markup.

Thank you very much. Hearing adjourned.

[Whereupon, at 4:41 p.m., the hearing was adjourned.]