NOT FOR PUBLICATION UNTIL RELEASED BY THE COMMITTEE

STATEMENT OF

DR. TERRY M. RAUCH,

ACTING DEPUTY ASSISTANT SECRETARY OF DEFENSE FOR HEALTH READINESS POLICY AND OVERSIGHT

COLONEL ADAM J. NEWELL

CHIEF OF MEDICAL READINESS

UNITED STATES AIR FORCE MEDICAL READINESS AGENCY

DR. RAUL A. MIRZA

DIRECTOR, CLINICAL PUBLIC HEALTH & EPIDEMIOLOGY

UNITED STATES ARMY PUBLIC HEALTH CENTER

CAPTAIN BRIAN L. FELDMAN

COMMANDER, NAVY AND MARINE CORPS PUBLIC HEALTH CENTER

MEDICAL CORPS, UNITED STATES NAVY

BEFORE THE

SENATE ARMED SERVICES COMMITTEE

SUBCOMMITTEE ON PERSONNEL

MARCH 16, 2022

NOT FOR PUBLICATION UNTIL RELEASED BY THE COMMITTEE

Chairwoman Gillibrand, Ranking Member Tillis, and Members of the Subcommittee thank you for inviting the Department of Defense (DoD) to provide testimony 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 opportunity to discuss the Department's actions in addressing airborne contaminants and open burn pits in military operations and the potential long-term health effects to our Service members and Veterans.

The Department is committed to continually improving our understanding of exposures of concern and potential health effects so that we can prevent and mitigate exposures, and medically evaluate, treat, and care for those we entrust to deploy, fight, and defend our Nation.

The Department recognizes the concerns about the potential health impact of burn pits and other airborne exposures to Service members and Veterans. Since 2001, over four million Service members, DoD civilian personnel, and DoD contractor employees have deployed in support of operations in Southwest Asia Theater of Operations, including but not limited to Iraq, Afghanistan, Syria, and other areas of the Middle East. Burn pits were authorized to dispose of waste during deployments in the Southwest Asia Theater of operations when other suitable means such as landfills, incinerators, or transport off the operating base were not feasible. The number of personnel potentially exposed varied based on the size of the base, length of time located at the base, and duration of burn pit use. Protective measures were emphasized to reduce exposures to burn pit emissions, including locating the burn pits away and downwind from personnel locations, segregation of hazardous material, and environmental monitoring. In 2007, DoD began to close burn pits and install incinerators, where feasible, or haul the waste off-base. Burn pit emissions contribute to the overall total amount of airborne hazards (e.g., fumes, vapors, gases, and particulate matter) to which deployed personnel are potentially exposed. Emissions from burn pits varied over time and between locations because of differences in the trash burned that may have produced variable levels of hazardous emissions. Exposures from other chemicals associated with ongoing military-related industrial activities (e.g., petroleum, oil, lubricants, and vehicle exhaust) also contributed to total airborne exposures to Service members.

There are ongoing efforts to address the effects of burn pit emissions on Service members and others and expand human health studies funded by the DoD and Department of Veterans

Affairs (VA) to assess airborne hazards and open burn pit exposure and potential adverse health outcomes.

Today's hearing on airborne hazards and open burn pits is critical. Our testimony will address DoD's coordination and research efforts with VA, DoD's pre- and post-deployment health assessments, outreach and education, as well as the Individual Longitudinal Exposure Record (ILER).

Coordination with VA

The Department has and will continue to collaborate with the VA, federal agencies, academia, and others on epidemiological and health-related research focused on a full understanding of potential long-term health outcomes associated with burn pit emissions and other airborne exposures during deployments.

The relationship between burn pit exposure and illness is a topic of active research by the DoD, VA, National Academies of Science, Engineering and Medicine (NASEM), and other research institutions. The DoD and VA will continue to support and fund these research efforts to better understand any health effects, and thus to better inform our care and treatment of Service members and Veterans. To date, a considerable volume of research on this very important topic has been completed, is ongoing, and is planned through various programs resourced by Congress, DoD, and VA. In addition to a concerted focus on health effects research to improve knowledge, diagnosis, and health care, the DoD and the VA recognize the need to expand airborne hazards education and outreach to Service members, Veterans, their families and caregivers, and health care providers. DoD and VA health care providers, staff, and executives are working together to review the latest airborne hazards research and to identify opportunities to improve policies and clinical care. The Departments also identified the need to improve recording of occupational and environmental exposures across installations and deployment environments.

The DoD and VA are currently collaborating on multiple efforts, including the development and deployment of the first-ever ILER, providing individual level exposure summaries, and the VA Airborne Hazards and Open Burn Pit Registry, which allows registered participants the option for a physical examination.

Research

The VA recently concluded that there is sufficient available scientific evidence to establish presumption of service connection for chronic asthma, rhinitis, and sinusitis due to exposure to airborne particulate matter for Veterans who served in the Southwest Asia theater of operations beginning August 2, 1990 to the present, or Afghanistan, Uzbekistan, Syria, or Djibouti beginning September 19, 2001 to the present.

NASEM published an update to the 2011 report on "Long-term Health Consequences of Exposure to Burn Pits in Iraq and Afghanistan" at the request of VA. The updated report titled, "Respiratory Health Effects of Airborne Hazards Exposures in the Southwest Asia Theater of Military Operations," was released to VA, Congress, and the public on September 11, 2020. The report provides valuable scientific information, findings, and recommendations on evidence of association between several respiratory health outcomes and exposure to airborne hazards and burn pit emissions; knowledge gaps that limit the health studies analyzed; use of emerging technologies to aid future research; and future research collaboration between the VA and DoD. DoD is reviewing the Academies' findings and recommendations with the VA to address knowledge gaps and application of emerging technologies to continue to further research and better understand whether specific respiratory health conditions are associated with airborne exposures during deployment, and to continuously improve the medical care provided to Service members and Veterans.

The Department has funded research on the potential human health effects of airborne hazards exposures in theater that address major epidemiological and clinical research questions. There are newly funded human health studies annually initiated since 2018, as well as ongoing health studies. Ten large human studies with at least 100 individuals have published results through 2021 and continue to produce results.

The Agency for Toxic Substances and Disease Registry (ATSDR) is providing consultation services to the VA to support their efforts to investigate the effects of airborne hazardous exposures to servicemen and women in the Southwest Asia Theater after 1990. ATSDR will engage in activities to provide subject matter expertise and support to the VA in the review of scientific literature as related to lung cancers and possibly other cancers that may be

associated with airborne hazardous substance exposures encountered in the Southwest Asia Theater of Operations after August 1990.

Health Assessment

DoD recognizes and is concerned about the potential acute and chronic health effects of airborne hazards to Service members and Veterans. On the basis of the available peer-reviewed published research, military personnel deployed to Iraq and Afghanistan appear 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.

DoD has enhanced the annual Periodic Health Assessment and deployment-related Pre- and Post-Deployment Health Assessments, as well as the Post-Deployment Health Reassessment to include more specific occupational and environmental exposure questions, including airborne hazards, to assist medical providers better assess exposures to burn pits and other hazards during evaluations. The assessments now include questions about asthma, wheezing, shortness of breath, difficulty breathing, and other lung problems, as well as tobacco use and smoking history. The assessments also include questions on whether the Service member was based or stationed at a location where an open burn pit was used; if they were exposed to airborne chemicals or contaminants; and if they are enrolled in the Airborne Hazards and Open Burn Pit Registry. Active Duty personnel who are in the registry are provided with an optional medical evaluation. The Separation Health Assessment form provided to Service members prior to separation from service will be updated by Fall of 2022, and include revised questions about occupational and environmental exposures to match those of the deployment-related health assessments. Health care providers review the questionnaire, document exposures and health concerns, and order tests or specialty consultations as needed based on symptoms or concerns.

Outreach and Education

The Airborne Hazards and Open Burn Pit Registry was established in 2014 to help Service members and Veterans document potential exposure to airborne hazards while deployed to eligible locations overseas. The registry helps VA collect, analyze, and publish data on health

conditions that may be related to environmental exposures experienced during deployment. As of January 24, 2022, 290,495 Service members and Veterans have enrolled in the registry.

To increase awareness of and participation in the registry, the DoD and VA coordinate to conduct ongoing outreach and education to potentially eligible Service members and Veterans. DoD's outreach to Service members includes periodic messages on their Leave and Earning Statements, flyers distributed via mail, a comprehensive suite of education and outreach materials housed on Health.mil, newsletter articles, and social media posts. DoD also provides outreach and education products via the Health.mil website, thus enabling access to these products to other DoD personnel and family members.

DoD recognizes its health care providers must also be aware of the registry and understand and be trained on how to assess patients' airborne hazard exposure concerns. This month, DoD will launch an updated version of its on-demand Airborne Hazards and Open Burn Pit Registry Overview course for health care providers. In addition to the training, DoD conducts periodic briefings, shares information via newsletters, and developed a registry Provider Guide and Clinical Toolbox distributed across DoD and intended to improve the clinical care of Service members after they return from deployments. DoD is collaborating with VA on the development and sharing of health care provider education products.

Comprehensive Exposure Monitoring During Deployment Operations

The Department has ongoing efforts to improve environmental health surveillance, exposure assessments, record keeping, and individual and area exposure monitoring. With millions of members of the Armed Forces either returning from recent deployments or separating from service, DoD is improving on health surveillance, exposure incident tracking and recording, occupational and environmental health site assessments (OEHSAs), and enhanced information technology systems. The OEHSA is based on a conceptual site model that describes all exposure pathways, and is used to develop a sampling and analysis plan to fully characterize the risks associated with complete exposure pathways. In addition, the Periodic Occupational and Environmental Monitoring Summaries (POEMS) are available for environmental health risk assessment, surveillance, and management. There are 202 unique POEMS across the Combatant

Commands that are critical to assessing the deployed environment. The OEHSA and the POEMS are key force health protection documents that drive environmental data collection and health risk assessments.

To further complement the environmental site and health assessment process, DoD is incorporating advanced sensor technology into military training and deployed operations to identify and track potential occupational and environmental exposures at the individual and unit level. Integrating multiple advanced information systems and data analytics into a Service members' longitudinal exposure record can help provide insight into the health impact of these exposures. Such efforts aim to improve data access and synchronize information systems across the DoD by developing a Comprehensive Exposure Monitoring (CEM) strategy.

The DoD CEM strategy includes individual, population, and area level monitoring that provides multiple levels of information on the environment and potentially hazardous exposures. The key elements to the CEM strategy are sensing and detecting exposures, storing and accessing exposure monitoring information, and analyzing and using data to inform operational and clinical decision-making. A DoD-wide CEM strategy will integrate and synchronize the existing disparate monitoring efforts in installation and deployment environments to optimize exposure monitoring and better protect Service members from potential adverse effects of various occupational and environmental exposures. The capability to optimize exposure monitoring and better understand the potential hazards that Service members face from these exposures will inform clinical care, operational decisions, claims adjudication, and future protective measures.

Data collection and preliminary analysis can come from a series of area sensors or even wearable sensors deployed on individuals. Integrating various information systems and sensor capabilities as part of a key DoD CEM strategy provides reliable exposure information. This further enhances DoD's ability for heath associations, force health protection decision support, improved individual longitudinal exposure record keeping, and support to epidemiological and exposure-based health effects research.

Currently, there are multiple exposure monitoring and risk analysis capability in development across the DoD. Each one is an element that improves occupational and environmental exposure management in installation and deployment environments. Generally, DoD focuses on proactive and strategic monitoring to inform mission readiness and medical

support. The types of exposure monitoring capabilities and solutions across DoD include the following: Joint Health Risk Management, Health Readiness and Performance System, Total Exposure Health, Bioenvironmental Threat Surveillance, and projects under the Defense Threat Reduction Agency and Military Operational Medicine Research Programs.

The DoD CEM capabilities-based assessment currently underway aims to evaluate existing DoD exposure monitoring capabilities and gaps and to assess the appropriate solutions encompassing a CEM strategy across the DoD. The goal is to unify exposure monitoring capability development activities and to establish a DoD strategy to synchronize and integrate the existing exposure monitoring capabilities.

ILER

The ILER in conjunction with a CEM program, established DoD policy, and longitudinal health surveillance, can serve as a system of record for Service members with known occupational and environmental exposure incidents throughout an individual's military career.

The ILER is a web-based application that interfaces with multiple data sources and provides DoD and VA the ability to link an individual to an exposure at a particular location. The ILER can compile exposure history and distill the relevant data into reportable individual-level exposure summaries. The individual exposure summaries provide DoD and VA clinicians, claims adjudicators, epidemiologists, researchers, and policy makers more awareness and insight into exposure events and provides a way to assess the potential impact on a Service member's health. As ILER develops into full functionality and interfaces with more data sources, it will provide a framework for identifying health effects associated with previously unrecognized exposures. The ILER will have the capability to build robust exposure cohorts that can be searched by specific exposures and health effects. Health care providers can currently access the ILER directly, and can access the individual exposure summary via the Joint Longitudinal Viewer. The Federal Electronic Health Record Modernization is leading the effort to increase ILER interoperability with the joint Electronic Health Record (EHR), including access to ILER data directly via the EHR. The ILER is scheduled to obtain full capability in June 2023.

The DoD is working to accelerate ILER development of enhanced capabilities and to increase the number of databases from which exposure-related information can be accessed, thus improving the individual level exposure monitoring and functional capabilities of ILER.

Currently, Service members and Veterans can access their respective exposure summaries by visiting their health care providers.

Using ILER to present individual exposure summaries, health conditions, and periodic health assessments, provides health care professionals critical information for key health care decisions. In combination with exposure data and health study data, better associations can be made between health changes and the history of exposures. This information can also aid the Service member or Veteran in alleviating the burden of proof when attempting to file a claim for benefits with the VA for a medical condition or injury they believe to be associated with a service-connected exposure.

The establishment of ILER, longitudinal monitoring, and health surveillance practice provides a valuable resource for future epidemiological and health studies. A review of the data collected from field assessments and future health studies on various cohorts could support a valuable analysis that evaluates the acute and latent health impact of military exposures occurring in installation and in deployed environments. Additionally, cohort studies specific to military areas of responsibility, commonly occurring environmental hazards, and latent illness could yield valuable information on unknown service-connected conditions. Leveraging the Airborne Hazards and Open Burn Pit Registry data for epidemiological studies could provide useful insights on future deployments to similar environments.

SUMMARY

In closing, DoD remains committed to continually improving our understanding of exposures of concern and potential health effects so that we can prevent and mitigate exposures, and clinically assess, treat, and care for our Service members and Veterans. The Department continues to collaborate with the VA, other interagency partners, and academia to further enhancements in research and technology to provide the best care and resources to those who fight for us, their families, caregivers, and survivors.